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INTRODUCTION TO ON COMPETITION

Michael E. Porter.
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COMPETITION HAS INTENSIFIED dramatically over the last decades, in virtually all parts of the world. It was not long ago that competition was all but absent in many countries, and in many industries. Markets were protected, and dominant market positions were the rule. Even where competitors were present, rivalry was anything but intense. Stifling government intervention blunted competition, as did outright cartels.

While we now associate the absence of competition with developing economies, it is easy to forget how much change has also taken place in advanced nations. The breakup of cartels and powerful business groups and the intensification of competition had much to do with the remarkable post-World War II economic progress of Germany and Japan. The most competitive Japanese industries today developed under intense internal competition, such as in consumer electronics and cars. Yet the development of large parts of the Japanese economy remains stunted by restraints to competition, in fields such as financial services, chemicals, and retailing.

Even in the United States, the nation with perhaps the strongest commitment to competition during the twentieth century, huge sectors of the economy have until recently been extensively regulated. Telecommunications, transportation, energy, and other sectors all provide vivid examples of the power of competition to unleash innovation and drive unheard of rates of progress.

Very few industries remain in which competition has not intruded on stability and market dominance. No company, and no country, can afford to ignore the need to compete. Every company, and every country, must try to understand and master competition.

The study of competition, in its full richness, has preoccupied me for two decades. While trained as an economist and steeped in the discipline of economic reasoning, I have sought to capture the complexity of what actually happens in companies and industries in a way that both advances theory and brings that theory to life for practitioners. My goal has been to develop both rigorous and useful frameworks for understanding competition that effectively bridge the gap between theory and practice. Striking this balance is challenging, and success sometimes eludes me. My secret weapons—using my ideas in actual practice to expose fuzziness in my thinking, raise new questions, and inform subsequent work.

This book draws together, for the first time in one place, more than a dozen existing and new articles I have written on competition. The articles address competition at multiple levels and in different settings, but a common perspective and set of frameworks unite them.

Most of the articles here first appeared in the *Harvard Business Review*. While I have also published extensively elsewhere, the *Review* has seemed to me the best

also provided extraordinary help in making my ideas clearer and more accessible.

I could not resist the opportunity, however, to include two new articles written especially for this collection. One addresses clusters, an important idea introduced in my work on the competitive advantage of nations; the second covers global strategy and reflects my most recent thinking.

The book has three parts. Part I addresses competition and strategy for companies, first at the level of a single industry and then for multibusiness or diversified companies. The structure and evolution of industries, and the ways in which companies gain and sustain competitive advantage in them, lie at the core of competition. A sophisticated understanding of these issues provides the foundation on which all else is built. Diversification, for example, cannot be approached sensibly without linking it directly to competition in individual businesses.

Part II addresses the role of location in competition. Interest in the competitiveness of nations, states, and cities has grown rapidly as competition has spread and intensified. Traditionally, competitiveness has been seen primarily as an issue for governments. Moreover, many theorists have claimed that location diminishes in importance as the mobility of capital and technology rises and companies become more global in their activities. The articles in Part II challenge both of these notions. In them, I seek to show how prosperity for both companies and countries depends on the nature of the local environment in which competition takes place. A framework for understanding the influence of location on competition reveals new roles for companies in shaping their competitive context; the need for a new type of relationship between business, government, and other local institutions; and new ways of thinking about government policy. Understanding the influence of location on competition, together with the ideas in Part I, is essential to setting a global strategy.

Part III draws on the frameworks in Parts I and II to address some important societal issues. The environment, urban poverty, health care, and income inequality are normally seen as social problems. As the articles in Part III illustrate, however, each of them is inextricably bound up with economics and, more specifically, with competition. Bringing a sophisticated understanding of competition to bear is not only revealing but offers concrete, workable approaches to solutions.

Competition and Strategy: Core Concepts

The collection begins with "How Competitive Forces Shape Strategy" (1979), the oldest article and my initial effort to influence practitioners. This article, applying the perspectives of industrial economics to strategy, introduces a systematic framework for understanding the structure of industries and how they change.[1] The performance of any company in a business can be divided into two parts: the first attributable to the average performance of all competitors in its industry and the second to whether the company is an above- or below-average performer in its industry. This article concentrates on the first part, that is, on the large and sustained differences in the average profitability of industries. Using the "five forces framework," consisting of the bargaining power of buyers, the bargaining power of suppliers, the threat of new entry, the threat of substitutes, and the intensity of rivalry, I describe the determinants of long-term industry profitability and ways that

companies can influence them.

"What Is Strategy?" addresses the second part of the profitability equation: the profitability differences among competitors. I had tackled the subject of positioning, or the creation of an advantaged approach to competing in an industry previously, but "What Is Strategy?," first published in 1996, contains my latest thinking. In this article, I argue that a firm achieves superior profitability in its industry by attaining either higher prices or lower costs than rivals. The sources of these price or cost differences among competitors can in turn be divided into two types: those due to differences in operational effectiveness, or attainment of best practice, and those due to differences in strategic positioning. Both operational effectiveness and strategy can best be understood by dividing the firms into activities, the discrete economic processes firms perform in competing in any business. Activities are defined more narrowly than are traditional functions. I introduced a framework for systematically examining activities and their connection to competitive advantage, called the value chain, in my book *Competitive Advantage.*

All companies must continually improve operational effectiveness in their activities, but sustainable performance differences will most often depend on having a distinctive strategic position. Strategy differences rest on differences in activities, such as the way companies go about order processing, assembly, product design, training, and so on. Strategies are sustainable because of tradeoffs, or choices that firms make to offer certain types of value but sacrifice others. Both competitive advantage and tradeoffs depend not only on individual activities but on the fit among numerous activities.

The first two articles in Part I provide the core analytical frameworks for developing strategy at the level of an individual business: industry structure and competitive advantage/activities. The next two articles in Part I—"How Information Gives You Competitive Advantage" and "End-Game Strategies for Declining Industries"—apply and extend these core frameworks to address important competitive strategy questions. "How Information Gives You Competitive Advantage" (1985) addresses the role of information technology in affecting competition. In it, Victor Millar and I suggest that information technology plays a role in both industry structure and competitive advantage. The five forces framework provides the structure for analyzing the industry effect, while activities and the value chain provide the structure for examining the competitive advantage effect. Although this article was written more than ten years ago, the issues are still current. Today's concerns include the role of the Internet, new computer-aided design and manufacturing technologies, and enterprisewide information systems. The tools in this article provide an approach to understanding the competitive significance of the latest generation of information systems and software.

In "End-game Strategies in Declining Industries" (1983), Kathryn Harrigan and I apply industry structure thinking and competitive advantage thinking to industries undergoing sustained decline due to the emergence of a superior substitute product, a shrinking customer group, or for other reasons. While industry decline is by no means inevitable, this article tackles the question of how to think strategically about competing in an industry facing decline. The tools of industry structure help firms to predict whether an industry can remain profitable as it gets smaller and whether continued participation is desirable. The logic of competitive advantage helps firms to

think about what profitable position they can occupy in the shrinking industry. In any economy, a significant number of industries will always be declining, just as some will always be emerging. My observation has been that too often companies, to their detriment, suspend strategic thinking when they find themselves in declining businesses.

The first four articles in Part I address strategy in a single business, or what I call *competitive strategy*. The individual industry is the core level of strategy, because it is at this level that industry profitability is determined and competitive advantage is either won or lost. The article "From Competitive Advantage to Corporate Strategy" (1987) addresses strategy at the other important level—the overall strategy of a corporation diversified into more than one business. I call this *corporate strategy*. Many accounts treat diversification as a distinct question, separate from competitive strategy. This false dichotomy, however, starts to explain the dismal performance of most companies in diversifying over the last three decades, a result vividly illustrated by the data presented in my article. Bad things often happen to companies that attempt to separate their thinking about diversification from their strategies for competing in their various businesses.

"From Competitive Advantage to Corporate Strategy" takes a different approach. It argues that while corporate strategy differs from competitive strategy, the two must be intimately connected. Corporate strategy, like competitive strategy, involves questions both of industry and competitive advantage. At the level of the corporation, however, the questions become somewhat different. From an industry perspective, corporate strategy is concerned with the choice of industries in which a company should compete and how it should enter them. From a competitive advantage perspective, the central question at the corporate level becomes how being part of the overall corporation enhances (rather than undermines) the competitive advantage of individual business units. "From Competitive Advantage to Corporate Strategy" explores these issues, making use of the concepts of industry structure and the value chain. It shows how the notion of activities can be used to understand the strategic logic of diversification and how corporate strategy must be linked to organization and management practices.

Companies have not lost their taste for diversification since this article was first published, and the diversification track record in the 1990s remains problematic. Notions of core competencies and critical resources have replaced discredited portfolio models in guiding much diversification, but too often the results differ little. These new ideas are imprecise and disconnected from relative cost and differentiation. Experience has shown that diversification not closely tied to sustainable competitive advantage at the business unit level often destroys economic value.

The Competitiveness of Locations

The core concepts of competitive and corporate strategy provide the foundation for examining any competitive situation. With ever increasing frequency, however, competition crosses borders. Firms compete across geographic locations with national, regional, and global strategies. Developing international (or cross locational) strategy requires two new sets of ideas. The first concerns the role of location in competition. As firms begin to compete across borders, they gain the ability to locate activities anywhere. International strategy, then, must involve an understanding of how location affects competitive advantage. The second new issue raised by international competition is the opportunity for firms to gain competitive advantage through coordinating activities across borders in regional or global networks.

Part II begins with the issue of location. In "The Competitive Advantage of Nations" (1990), I develop a new theory of the competitiveness of nations, states, and other geographic areas. Most treatments of competitiveness have concentrated either on macroeconomic policies (government budget deficits, monetary policy, opening of markets, or privatization) or on comparative advantages due to endowments of inputs such as labor, natural resources, and capital. My article takes a very different approach, arguing that the competitiveness of locations is primarily rooted in the nature of the business environment they offer firms. Access to labor, capital, and natural resources does not determine prosperity, because these have become widely accessible. Rather, competitiveness arises from the productivity with which firms in a location can use inputs to produce valuable goods and services. Moreover, the productivity and prosperity possible in a given location depend not on what industries its firms compete in, but on how they compete. Traditional distinctions between high tech and low tech, or between manufacturing and services, have little relevance in an economy in which virtually all industries can employ advanced technologies and high skill levels to achieve high levels of productivity.

The roots of productivity lie in the national and regional environment for competition. In "The Competitive Advantage of Nations," I capture the effect of location on competition in a framework graphically depicted as a diamond made up of four primary facets: factor conditions, demand conditions, the context for strategy and rivalry, and related and supporting industries. The diamond metaphor has become common in referring to my theory. Government policies can influence all four parts of the diamond positively or negatively. "The Competitive Advantage of Nations" explores these sources of competitiveness, how they change, and the implications for governments and companies. Diamond theory is not only a tool for managers but also a microeconomic-based approach to economic development for governments that is closely tied to actual competition.

"Clusters and Competition: New Agendas for Companies, Governments, and Institutions," one of the two articles written especially for this collection, explores one of the most important ideas in my overall competitiveness theory—the concept of clusters. Clusters are geographic concentrations of firms, suppliers, related industries, and specialized institutions that occur in a particular field in a nation, state, or city. This new article pulls together what I have learned about clusters both from research and in practice, in terms of cluster theory, the role of clusters in competition, and their implications for government policy, company and institutional behavior. Clusters are a prominent feature on the landscape of every advanced economy, and cluster formation is an essential ingredient of economic development. Clusters offer a new way to think about economies and economic

development; new roles for business, government, and institutions; and new ways to structure the business-government or business-institution relationship. Dozens of cluster initiatives have sprung up in many parts of the world, and this article summarizes some of the learning gleaned from both advanced and developing economies.

"How Global Companies Win Out" (1982) moves from the influence of location to the role of corporate global networks. In it, Thomas Hout, Eileen Rudden, and I describe some of the basic characteristics of a global company and why a truly global company is more than just a company operating in many nations. The article outlines a number of ways in which coordination across nations enhances competitive advantage, illustrated with three case studies of prominent global competitors.

The final article in Part II, "Competing Across Locations: Enhancing Competitive Advantage through a Global Strategy," is the second article newly written for this collection. It brings together the two dimensions of international strategy—location and global networks. The concept of activities, so important to understanding competitive advantage in general terms, provides the basic framework for international strategy as well. When competing across borders, firms can spread activities to multiple locations to harness their locational advantages, while coordinating among dispersed activities in a variety of ways to harness network advantages.

"Competing Across Locations" develops the implications of this framework for global strategy in a particular business. Global strategy taps the innovation advantages of locating headquarters or "home-base" activities in cluster locations while spreading other activities to other locations to source low cost inputs and gain access to foreign markets. Coordination transforms this array of dispersed activities into a global network. Earlier thinking about global strategy, which focused only on globalness and networks, was clearly too simple. This new article aims to take global strategy thinking to the next level. It also makes clear that global strategy is just a special case of the more general issue of competing across geography. The same framework can be applied to a local producer striving to become national.

Competitive Solutions to Societal Problems

A deep understanding of domestic and international competition offers powerful insights into a wide variety of societal problems. Part III begins with an article on the environment, "Green and Competitive: Ending the Stalemate" (1995), written with Claas van der Linde. Environmental improvement is often seen as at odds with economic competitiveness because environmental standards can impose costs on business. This view, however, derives from a static and oversimplified view of competition. Drawing on my work on competitiveness, "Green and Competitive" suggests that "environment versus competitiveness" is a false dichotomy.

In the new thinking, competitiveness arises from increasing productivity in the use of resources. Productivity improvements must be never-ending. Seen in this light, virtually all forms of corporate pollution are manifestations of economic waste; for example, resources used inefficiently or valuable raw materials discarded. Improving environmental performance through better technology and methods, then, will often increase productivity and offset or partially offset the cost of the improvements. This

implies that environmental regulation should focus on reducing the transactions cost of the regulation itself, which add neither environmental nor economic value, while facilitating product and process innovation. Corporations should see environmental improvement not as a regulatory matter but as an essential part of improving productivity and competitiveness.

"The Competitive Advantage of the Inner City" (1995) addresses the economic distress of America's urban cores. Urban poverty has been seen primarily as a social problem, and proposed solutions have focused on meeting the pressing human needs of inner city residents. But the problem is equally an economic one. Without accessible jobs and opportunities for creating wealth, social investment will be insufficient to achieve lasting benefits. Moreover, while there have been efforts at inner-city economic development, too many have tried to defy the laws of the marketplace. Based on the presumption that inner cities face many competitive disadvantages as business locations, "economic" development has often consisted largely of creating non-profits and relocating government buildings. Alternatively, large subsidies have been used in attempts to influence companies' location choices.

Rather than concentrate on competitive disadvantages, "The Competitive Advantage of the Inner City" turns received wisdom on its head. In it, I argue that only by focusing on the competitive advantages of inner city locations will economic development be sustainable. Applying my broader work on competitiveness to inner cities, I outline the advantages of inner cities, which are manifested in the many hundreds and even thousands of successful inner-city-based companies in major cities all across the country. An approach that builds on these advantages while tackling frontally the competitive disadvantages of inner cities as a business location offers a new model for addressing our most distressed communities. There is nothing inevitable about the decline of cities if we shift our focus from reducing poverty to creating jobs, income, and wealth.

Health care is another pressing social concern facing the nation, where high costs and the large number of people without health insurance have triggered a national debate on how best to restructure the system. In "Making Competition in Health Care Work" (1994), Elizabeth Teisberg, Gregory Brown, and I argue that cost cutting and managed care will not provide a sustainable solution. Only through continued innovation in medical treatment and service delivery methods can the cost of health care be controlled without rationing care or eroding its quality.

The article explores how faulty incentives produced a form of competition that improved quality but drove up cost. The recent revolution in managed care and the move to capitation has skewed incentives in the other direction, toward rationing care and undermining quality. Further, this new structure has also created barriers to innovation. In "Making Competition in Health Care Work," we outline a new strategy, calling for modified incentives, widely available information on treatment outcomes, and a renewed orientation toward innovation.

The final article in Part III, "Capital Disadvantage: America's Failing Capital Investment System" (1992), takes on the controversial issue of how American capital markets and corporate governance practices affect the long-run prosperity of our economy. At first glance, this may seem obvious: America's capital markets, the most efficient in the world, contribute greatly to the productivity of American industry. A deeper look, however, reveals a more complex relationship. Clearly, the American

system fosters efficient use of capital, as the relentless pressures for profit improvement attest. These pressures have created a near-term advantage for American industry, especially given the barriers and impediments to efficiency improvement in Europe and Japan.

The question remains, however, whether the American system as currently structured fosters the appropriate rate of investment in the long term, in such things, for example, as advanced capital goods, R&D, market development, and skills training. Without high rates of investment in capital per worker and in training, not only may companies be unable to sustain their competitive advantages but less-skilled workers will face stagnant prospects and increasing inequality.

Rapid stock trading, a preoccupation with near-term stock price appreciation along with a lack of incentives for investors to monitor long-term company prospects raise questions about the alignment between stock market valuation and the sources of companies' competitive advantage. Interestingly, the legendary American venture capital system has a very different structure than that of the mainstream capital markets, with patient investors, active monitoring, and long-term ownership of large, controlling equity stakes.

In "Capital Disadvantage," I draw on research by other scholars and lay out the case for why the American capital allocation system may outperform those of other countries in some respects, while still falling well short of the ideal in other respects. The problems now afflicting Europe and Asia make it tempting to declare the American system the winner. Anemic economic growth in the United States, coupled with rising inequality, however, suggest that the need remains for serious scrutiny of our system.[3]

The articles in Part III represent the beginnings of a new integration of economic and social policy. Traditionally, economic and social policy have been seen as distinct and often competing. Economic policy concerns itself with creating wealth by providing incentives, encouraging savings and investment, and minimizing government intervention. Social policy has concentrated on providing for public education and other human needs, aiding disadvantaged groups, protecting citizens through various forms of regulation, and, recently, preserving the environment. Social policy has relied heavily on market intervention, subsidies, and redistribution.

Social policymakers tend to see the market as the problem and consequently attempt to modify its outcomes. Economic policymakers tend to see government intervention as the problem. Social advocacy groups often view business as the problem. Businesses see social goals as outside their realm of interest and view a strong economy, unshackled by counterproductive intrusions, as the best social program.

These old dichotomies are false ones and represent an increasingly obsolete perspective. Social and economic goals are not inherently conflicting in the long run. A productive and growing economy requires educated, safe, healthy, decently housed workers who are motivated by a sense of opportunity. Economic competitiveness need not be traded away to preserve the environment, because corporate pollution results from unproductive use of resources. The only real conflict lies in means. Efforts to advance social goals via redistribution, subsidies, and market distortion usually fail and inflict in the process steep economic costs, as illustrated in my

articles on the environment and the inner city. Similarly, efforts to boost profits at the expense of worker training, motivation, and a sense of well being will fail in the long run.

Instead of such flawed approaches, we need a new one based on harmonizing and pursuing simultaneously economic and social goals. This can be done through a central focus on innovation and competition—working through the market rather than against it. Social programs must prepare individuals to enter and succeed in the market system, not insulate them from it. Efforts to address social issues, such as pollution and the high costs of health care, must harness innovation and competition to address underlying causes, rather than attempt to shift the costs onto some other group within society.

The articles in Part III illustrate these principles, using as illustrations health care, the environment, and urban poverty. The same principles, however, can be applied to many social issues, including social security, education, or housing. Fannie Mae, for example, has done as much as any other social program to bring affordable housing to people with low incomes while still itself making a profit. By reducing the cost of financing and by finding creative ways to assess creditworthiness without resorting to traditional metrics (such as income level and large required down payments), Fannie Mae has expanded home ownership in a sustainable way, which encourages other low-income people who aspire to homeownership to better manage their finances.

"Capital Disadvantage" connects closely to these issues, as well. It shows how artificial short-term profit pressures can lead companies to make choices that compromise their own and society's long-term interests. Hence, scrutiny of our capital market system has an important role in the creation of a context for bringing together social and economic goals.

Expanding Frontiers

As I hope is evident, my work rests on a core set of ideas about competition and contains a consistent perspective. Yet my ideas continually evolve and have broadened over time to encompass new dimensions. Industry structure, an activity-based view of competitive advantage, and my more recent theory of the role of location in competition represent the three core frameworks that cut across all my work. My understanding of each one and of the connections among them, is continually being deepened and extended.

Exploration of one question concerning competition and strategy has suggested the next question, and that one the next. Thinking about competition and strategy in a single industry, for example, led me to an interest in the influence of diversification on industry competition. Early work on positioning provided the impetus for the activity-based view of the firm. Thinking about activities led me to puzzle over the influence of globalization, which in turn raised the question of how location mattered. A focus on location forced me to confront the role of government in competition, not just companies. My work on location also triggered an interest in economic development, urban poverty, and environmental policy.

Over time, I have been led to explore new units of analysis. My initial work

stressed *industry* at a time when the firm as the unit of analysis was dominant. Building on thinking about the firm as a whole, my subsequent work stressed the *activity*. Building on the focus on industry, my later work added consideration of the *cluster* and the *geographic location*.

As each new question arose and each new set of ideas developed, I have been led to re-examine what came before. The activity-based view of the firm caused me to refine and extend my earlier thinking about generic strategies. My recent work on distinguishing operational effectiveness and strategy ("What Is Strategy?") both builds on earlier work and informs it. The new theory has deepened my understanding of positioning, and linked it more tightly to activities. Through this new work, I have also extended activity theory through the concepts of tradeoffs and fit.

The distinction between operational effectiveness and positioning also sheds new light on a wide variety of other issues. Financial market pressures, for example, can be desirable motivators of operational improvement, but often lead companies to compromise their unique strategic positions by pursuing growth in segments where they lack any real advantage. Another example of the distinction is in evaluating the role of information technology in competition. Much of the new information technology is being directed at improving best practice—operational effectiveness—rather than enabling unique positioning. The lurking danger with the new generation of IT tools, however, is that too many companies will apply them in the same way. This will have the unwitting effect of homogenizing competition, undermining customer choice, and triggering mutually destructive rivalry.

The research on location has opened up important new connections as well. The most obvious one is in an enriched conception of global strategy. Location, however, clearly plays a role in industry structure and competitive advantage, including helping to define feasible forms of competing. The state of the diamond and the extent of the cluster can raise or lower barriers to entry into an industry, the power of customers and suppliers, and the mix and threat of substitutes. Locational factors also influence the forms of rivalry that are feasible in a nation or state, ranging from imitation and price competition in developing economies to innovation and differentiation in advanced ones. In developing economies, for example, locational deficiencies mean that local firms face great difficulties in attempting to enter attractive industries and in avoiding destructive price rivalry. At the same time, government intervention and a shortage of capital often suspend competitive forces and preserve monopolies.

Location also strongly influences competitive advantage and the types of strategies firms can choose and successfully implement. The state of local infrastructure, the skills of local employees, and other diamond conditions directly influence operational effectiveness. Diamond conditions, such as local demand sophistication, unique skill pools, and the local presence of related industries, can also shape the types and variety of strategic positions chosen, in terms of customer segments selected or product varieties stressed. The business environment at locations not only influences the choice of strategy, but also the ability to carry out strategies. At the level of activities, it is also evident that access to many of the resources, capabilities, and skills that contribute significantly to a firm's uniqueness depends on the nature of the local environment.

Location also bears on corporate strategy. Diamond conditions influence the types of corporate value added that truly affect competitive advantage. In developing countries, value is created by a corporate parent's ability to provide capital access and to introduce professional management. This helps explain the prevalence of conglomerate groups in many emerging economies. In more advanced economies, portfolio management adds little value, and other approaches to diversification are needed; here, diamond conditions affect the kinds of synergies that are feasible.

One connection between location and my earlier ideas creates an apparent puzzle. The industry structure framework shows how powerful buyers and suppliers and intense rivalry can depress profitability, while diamond theory suggests that local rivalry, demanding customers, and sophisticated local suppliers foster competitiveness by stimulating and supporting high productivity and rapid innovation. How can these be reconciled? First, we must distinguish between the industry in a single location and the industry globally. The presence of a favorable diamond in one location, including intense local rivalry, allows firms based there to achieve collectively a higher level of productivity and also to progress faster than firms based in other locations. Profitability in the local market may be lower, but the global profitability of firms based there will be superior. Another way of making the same point is to recognize that diamond conditions will affect the ability of firms based in a location, on average, to gain a competitive advantage over firms based elsewhere. Average industry profitability globally will be dependent on average industry structure globally.

The work on location illuminates the importance of dynamic improvement to competitive advantage. It shows how rapid upgrading and innovation is needed to create and sustain advantage in advanced economies. In contrast, the industry structure and activity frameworks did not focus on change; rather, they apply at any point in time. My early investigations were heavily cross-sectional (for example, answering such questions as why some industries are more profitable than others at a given time or why one rival is more profitable than another). These were the logical first questions. My recent work on operational effectiveness and positioning, however, begins to bridge positioning, location, and dynamic improvement. It stresses the necessity of continual improvement in operational effectiveness but emphasizes the need for continuity in strategy, along with the concomitant need for relentless improvement in the means for carrying out strategy. Both operational effectiveness and strategy, however, are influenced by location.

Finally, a deeper understanding of competition, enriched by work on location, has opened up a whole new frontier for exploring the connection between competition and social issues. I am earlier in this process, which is continuing.

New connections remain to be discovered, and my learning about competition is unlikely to stop anytime soon. One unchanging certainty, however, is that competition will continue to be both evolving, unsettling, and the source of much of our prosperity. If this collection could convey only one message, I would want it to be a sense of the staggering power of competition to make things better—both for companies and for society.

NOTES

1. This article became the lead chapter of my book *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: Free Press, 1980).

2. For my earlier work on positioning, see *Competitive Strategy*, Chapter 2, and *Competitive Advantage: Creating and Sustaining Superior Performance* (New York: Free Press, 1985).

3. In 1995, I co-chaired a bipartisan group of business, financial, and government leaders that further explored some of these issues. Its report, "Lifting All Boats," is a good companion piece to my article. See "Lifting All Boats: Increasing the Payoff from Private Investment in the U.S. Economy," a report of the Capital Allocation Subcouncil (Robert Denham and Michael Porter, co-chairmen) to the Competitiveness Policy Council, September 1995.

4. These and other aspects of corporate groups in developing economies are explored in T. Khanna and K. Palepu, "Why Focused Strategies May Be Wrong For Emerging Markets," *Harvard Business Review* 75, no. 4 (1997): 41-51.

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Part One: The Microeconomic Foundations of Economic Development[1]

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The macroeconomic and political underpinnings of competitiveness and economic development are becoming better understood. A stable political environment and sound political and legal institutions represent important preconditions for competitiveness. A macroeconomic policy involving prudent government finances, a manageable debt, a moderate cost of government, a limited government role in the economy, and openness to international markets promotes national prosperity. In addition, growth theory stresses the importance of a high rate of aggregate national investment in human and physical capital.[2] Many nations have gone through the process of macroeconomic stabilization and liberalization.

Yet a stable political context and sound macroeconomic policies are necessary but not sufficient to ensure a prosperous economy. As important—or even more so—are the microeconomic foundations of economic development, rooted in firm operating practices and strategies as well as in the business inputs, infrastructure, institutions, and policies that constitute the environment in which a nation's firms compete. Unless there is appropriate improvement at the microeconomic level, political and macroeconomic reform will not bear full fruit.

Some economists are prone to think that if the proper macroeconomic conditions can be put in place, the rest will take care of itself. If government operates efficiently, aggregate savings are ample, and inflation is controlled, then lower interest rates will lead firms to make the investments necessary to enhance competitiveness. If government resources are allocated to education, the resulting rise in human capital will translate into jobs with higher wages. If government removes distortions in prices and exchange rates, firms will become more innovative and sophisticated. There is some truth in this, because lowering the cost of capital, raising the rate of investment, and removing distortions certainly matter. However, the gap between macroeconomic policies and company competitiveness is a wide one.[3] A myriad of intervening circumstances at the microeconomic level must be understood and addressed by the private sector and through government policies if a nation's prosperity is to improve.

In this article, I sketch some of the most important microeconomic foundations of competitiveness and economic development, drawing on the theoretical framework first published in *The Competitive Advantage of Nations*.[4] Improving competitiveness depends on parallel and interdependent changes in both company practices and the national business environment at the microeconomic level. I outline these changes and show how the constraints and challenges to development shift as a country moves from low to middle income and ultimately to an advanced economy.

Using data available for the first time from a special section I prepared for the Executive Survey of *The Global Competitiveness Report 1998*, the next chapter examines the microeconomic foundations of economic development statistically. The results are striking. Microeconomic circumstances explain much of the variation in overall national productivity, measured most broadly by a nation's GDP per capita. The controlling micro dimensions differ for lower, middle, and high income nations. Microeconomic circumstances also have an important influence in explaining differences in growth in GDP per capita, which appears to be equal to if not greater than that of macroeconomic policy indicators drawn from growth theory. Macro policies and micro circumstances appear to have a complementary relationship.

In order to build a composite picture of the relative microeconomic competitiveness of a country that encompasses the entire set of microeconomic variables, common factor analysis is utilized to create a microeconomic competitiveness index. The index explains more than 82% of the variation in the level of GDP per capita in the sample of countries. Together with macroeconomic variables, it also explains a substantial portion of the variation in GDP per capita growth. I explore the differences between the ranking of countries using the microeconomic index and the broader Competitiveness Index.

The statistical analysis here is preliminary, and much more can be done. The short time between the availability of the survey data and the release of *The Global Competitiveness Report*, together with limited availability of current macroeconomic variables, leave important statistical avenues unexplored. Causality cannot be established because only a single year's microeconomic survey data is available. Nevertheless, there is strong support for the importance of microeconomic conditions to economic development and a pressing need to better integrate micro and macro in competitiveness thinking and in the reform process.

Prosperity and Productivity

Economic development seeks to achieve long term, sustainable improvement in a nation's standard of living, adjusted for purchasing power parity.[5] Standard of living is determined by the productivity of a nation's economy, which is measured by the value of the goods and services (products) produced per unit of the nation's human, capital, and physical resources. Productivity, then, defines competitiveness. The concept of productivity must encompass both the value (prices) that a nation's products command in the marketplace and the efficiency with which standard units are produced. Value productivity, as I like to call it, or the revenue produced per unit of labor or capital, sets the wages that can be sustained, the returns to invested capital, and the surplus (after costs) generated by a nation's physical resources. Volume productivity, or the units produced per unit of labor or capital, does not necessarily tie to wages and profits.[6] Other things contribute to national standard of living besides wages and returns to capital such as income inequality and environmental quality. I will treat these briefly, although my primary focus is on the underpinnings of rising average income.[7]

The central issue in economic development, then, is how to create the conditions for rapid and sustained productivity growth in a nation's economy. Productivity growth must encompass all industries, because even local industries affect the cost of living and the cost of doing business for internationally traded industries. I will refer to the process of productivity growth as *upgrading*, or moving to more sophisticated ways of competing.[8]

The productivity imperative means that a nation's wealth is principally of its own collective choosing. Location, natural resources, and even military might are no longer decisive. Instead, how a nation and its citizens choose to organize and manage the economy, the institutions they put in place, and the types of investments they individually and collectively choose to make will determine national prosperity.[9]

Productivity and the Microeconomics of National Income

The underpinnings of productivity can be made more concrete by constructing a nation's income statement at the microeconomic level, or at the level of the representative firm (see **Figure 1**). Imagine the typical or average firm operating in the economy. National wealth arises primarily from two sources, the wages per hour the firm pays and the return earned on the invested capital.[10] Taxes on these generate much

of the income to pay for government. **Figure 1** expresses national business income on a per unit basis to highlight these metrics.

Figure 1 National Business Income Statement

Revenue per Unit

Cost per Unit

Labor Cost per Unit
Hourly Wage Rate
÷ Worker Productivity

Purchased Input Cost

Logistical Cost

Administrative Cost

Borrowing Cost

Profit per Unit

x Capital Productivity

Return on Capital

Revenue per unit is the average unit price a nation's goods can command in both domestic and foreign markets. The costs of goods sold per unit can be usefully subdivided into five categories: labor cost (a function of the hourly wage rate and worker productivity); purchased input cost; logistical cost; administrative cost; and borrowing cost. Logistical costs include costs of transportation, communications and handling, while administrative costs include such things as marketing, R&D, technology licensing, legal, and management. Borrowing cost refers to the cost of debt financing. The residual is national business profit per unit. Profit per unit times capital productivity (unit output per dollar of capital invested) equals the return to capital.[11]

Economic development can be seen as the process of *improving the fundamentals of this national business income statement*. Nations are poor because they can support only low wages and low returns to capital and to resource holders.[12] The national business income statement highlights the ways that nations can improve their productivity and hence their prosperity. First, they can *enhance worker productivity*, which supports either higher wages, higher profits, or both. Higher worker productivity requires greater skill, better management, or the use of better technology.

Second, a nation can increase its productivity by *reducing unnecessary input, logistical, administrative, and borrowing costs*. Firms in developing countries often face higher (and sometimes hidden) costs in these areas which do not contribute to customer value. Input costs can become unnecessarily elevated because appropriate inputs are unavailable or costly. Logistical costs can be higher than needed due to poor and unreliable transportation systems. Administrative costs can be driven up by management time and money wasted dealing with government and navigating regulations.

Third, a nation can increase its productivity and prosperity by *elevating the unit prices* its products can command. This depends on improving product quality, reliability, features, services, or marketing, and shifting product mix to more advanced varieties. Higher prices raise the revenue per hour

of work, which supports higher wages and higher profits. The capacity to export at high unit prices improves the terms of trade and underpins a strong currency, reducing the cost of imported inputs.

Fourth, a nation becomes wealthier if it can *raise capital productivity*, through reducing downtime, easing bottlenecks, or improving technology. Raising capital productivity requires sustained investments in modern equipment and developing the skills to use it efficiently. It also depends on efficiencies in infrastructure that limit supply disruptions, and the absence of regulatory or other constraints to capacity utilization.

Finally, a nation can become wealthier if it can *increase the quantity of labor and capital productively employed*. However, simply employing more workers or more capital at low productivity (e.g., through unproductive government jobs) does little to boost prosperity in the long run. Similarly, improving productivity by reducing the overall number of citizens employed may be necessary in the short run but will not sustain long run improvements in prosperity. However, if more factors or previously unutilized factors can be drawn into relatively productive uses, the standard of living rises.[13]

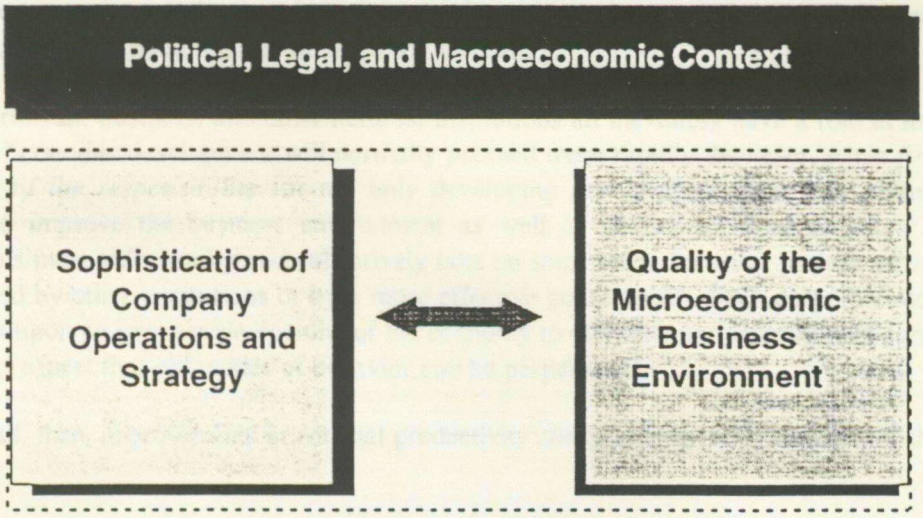
The productivity of an economy depends on the productivity of what *both* domestic and foreign firms choose to do there. In global competition, activities such as labor intensive assembly, resource extraction, physical distribution, and after-sale service are often dispersed to locations other than a company's headquarters. In earlier stage development, indigenous firms operate largely in the home country, and the country is able to attract only the least skilled, labor-intensive, or resource extraction activities of multinational companies as well as those activities connected to the local distribution of products designed and produced elsewhere. If development is to proceed, local firms must become more advanced and international, while the country must be able to attract "home bases," or headquarters of foreign firms for product varieties, product lines, or even entire businesses.

Foundations of Upgrading

While sound political/legal structures and macroeconomic policies create the potential for improving the national business income statement, productivity will only increase if the nation improves its capabilities at the microeconomic level. The microeconomic foundations of development can only be understood by examining the way in which productivity increases at the firm, industry, and cluster (discussed below) levels.

The microeconomic foundations of productivity rest on two interrelated areas:

The New Competitiveness Paradigm



The sophistication (e.g., technology, skill) with which companies compete ultimately sets national productivity. Unless companies become more productive, an economy cannot become more productive. The sophistication of companies' approaches to competing determines the prices that their products and services can command and the efficiency with which they produce.

Company sophistication in competing can be thought of in two parts. The first and most basic is what I term operational effectiveness, or the extent to which companies in a nation approach *best practice* in areas such as production processes, technologies, and management techniques.[14] The second aspect of company sophistication relates to the types of strategies companies employ, such as the ability to compete on differentiation and not just cost, the array of services that can be provided, and the approach used in selling internationally.

Yet the sophistication with which companies compete is strongly influenced by the quality of the national business environment in which they operate. The business environment, then, has much to do with the types of strategies that are feasible and the efficiency with which firms can operate. For example, operational efficiency is unattainable if regulatory red tape is onerous, logistics are unreliable, or firms cannot get timely supplies of components or high-quality service for their production machines. Similarly, firms have a hard time competing on differentiation and service if they cannot find well-educated staff, confront marketing channels that are poorly developed, and sell to local customers who are unsophisticated. The microeconomic business environment affects many of the costs and opportunities for improvement in the national business income statement.[15]

Improvements in the national business environment and company upgrading are inextricably intertwined. A national business environment with improving infrastructure and more advanced institutions fosters more sophisticated strategies by companies. But company upgrading can also directly contribute to improving the business environment (e.g., higher-quality suppliers, more sophisticated buyers) and create both demand and pressures for improvements in effectiveness by government and other institutions.

Conversely, the connection between company behavior and the business environment creates a chicken-and-egg problem that can stall development. Suppliers do not upgrade because they perceive little demand for better quality products and services. Universities fail to create advanced degree programs and research institutes because companies do not draw on them.[16]

Government, business, and other national institutions all inevitably have a role in improving micro foundations. Economic development will normally proceed more rapidly, however, when *firms are willing to take some of the responsibility* for not only developing new strategies but also putting pressure on government to improve the business environment as well as getting involved directly. In developing countries, firms must individually and collectively take on some roles, for some periods of time, that would be better served by other institutions or by a more effective government. Such corporate attitudes, in turn, depend in part upon an irrevocable opening of the economy to domestic and international competition which removes any prospect that old modes of behavior can be perpetuated.

Overall, then, improvements in national productivity and prosperity are a function of three interrelated influences:

National Productivity = f (political and macroeconomic context; microeconomic business environment; company operations and strategy)

Political and legal institutions coupled with macroeconomic policies set the overall context. They can create the potential for upgrading at the microeconomic level, or work against it. The microeconomic business environment constitutes the external influences on company productivity. It, in turn, shapes the sophistication with which companies compete, together with companies' own internal actions and choices.

Contingent relationships flow not only from macro to micro but in the opposite direction. Improving company sophistication can work to improve the microeconomic business environment. More sophisticated companies act as sophisticated suppliers and buyers to each other, for example, and create pressures for improvement in institutions and government. Similarly, improving both the microeconomic business environment and company sophistication can make it much easier to choose and maintain sound macroeconomic policies. Rapidly rising productivity and more competitive companies support growth without inflation, for example, and underpin rising incomes and taxes that benefit government finances. Improving microeconomic foundations, such as more open competition and greater access to information, can also help to improve political and legal institutions and limit corruption.

Ultimately, however, a nation's productivity is the sum of the productivity of its companies. Companies represent the locus of competitiveness in an economy. Sound macroeconomic policies will not produce a prosperous economy unless the microeconomic environment actually improves; an improving micro environment will not produce a prosperous economy unless companies actually improve. Improvement at the micro level cannot be assumed but requires a myriad of policy choices by government, institutions, and companies.

Company Transitions in Economic Development

The ways in which company operations and strategy must become more sophisticated to support rising prosperity are numerous and hard to generalize. However, my research in countries at all stages of development, together with a growing body of studies, suggest some of the important priorities.[17]

In low-income countries, companies compete on factor cost using inefficient methods. Cost positions rest heavily on cheap wages and natural resources. Companies imitate domestic and foreign competitors' offerings. They rarely segment markets but seek dominant market positions in what they see as an inherently small market. Time horizons are short, and there is minimal investment in equipment, R&D, or training. Instead, companies focus on government as the dominant influence on competitive outcomes and seek concessions, licenses, subsidies, and protection.

International strategies in developing countries involve a heavy reliance on OEM customers and foreign partners for designs, components, process technology, distribution channels, and marketing. The outcome is that exports are dominated by labor- and resource-intensive products sold almost exclusively to advanced markets. There is little trade with neighboring countries in fields other than traditional products. The net result of these strategies and modes of competing is low productivity.

Moving to a more competitive economy and higher levels of income requires a transformation in these modes of competing and in the character of local rivalry. Overall, the process of economic development requires a transformation of the types of competitive advantages a nation's companies enjoy in international markets. Advantage must shift from comparative advantage (low-cost labor or natural resources) to competitive advantages due to unique products and processes. What were strengths in traditional ways of competing become weaknesses. Changes are often resisted, because past approaches were profitable and because old habits are deeply ingrained in organizations.

The changes in company strategy that are required for successful development can be summarized around a series of transitions. Each of these transitions involves a spectrum, and movement along it enhances productivity and competitiveness. Some of the transitions must be fully accomplished in moving an economy to middle-income status, while some remain the corporate agenda even for the most advanced economies if productivity is to continue improving.

Shifting goals and mindsets. In developing economies, firms often have short time horizons due to instability and a high cost of capital. The most basic change in strategic thinking required is to accept the inevitability of competition, and embrace its value in stimulating improvement and expanding the market. Rather than aspiring to a dominant share of a small protected pie, then, the mentality must shift to expanding the pie both domestically and internationally. In advanced economies, the challenge is to manage companies for productivity and hence profitability rather than prestige, size, or market share. In western Europe, for example, the inability to place profitability as the central goal is in many ways the greatest constraint to economic development.

Building strategy around commitments to industry. Industry structure does not figure prominently in many investment choices in developing countries, because there are shortages of quality products, entrenched monopolies, or government intervention that override market forces. As economies develop and competition intensifies, however, industry structure becomes increasingly important to profitability. Companies must make choices about where to compete and make commitments to mastering competition in their chosen industries. In advanced economies, firms must devote increasing attention to competing in ways that make industry structure more attractive through strategies based on enhanced differentiation, greater segmentation, more control over distribution channels, and other things.

Raising operational effectiveness to world standards. In developing countries, most companies are far from best practice. Facing limited rivalry and resting on cheap factor inputs, most companies drift along with little concern for continuous improvement. To support rising wages and profits, operational effectiveness must improve. Typical priorities are rationalizing small facilities, redesigning processes, introducing information systems, and upgrading management methods throughout their operations. While external constraints often hamper the process, internal constraints are equally important in the form of employee attitudes and complacency. International study tours, aggressive efforts to seek assistance from suppliers, consultants, and other means are needed to speed up progress.

The process of improving operational effectiveness does not stop in advanced economies; if anything, it is more important to support high wages. In Japan, for example, firms are far behind in the use of information technology in the office and for marketing.

Widening advantages in the value chain. In developing economies, participation in the value chain tends to concentrate on production and local distribution. In Central America, for example, many companies do not even have a marketing department. Such narrow competitive advantages will not be sustainable as the economy develops. This limits the ability to develop distinctive strategies, or penetrate new markets. To become more competitive, companies must widen their capabilities in other activities such as marketing, logistics, and service. In advanced economies, product development, service delivery, and information management tend to be the controlling elements.

Moving from opportunism to strategy. The very notion of a consistent strategy is often met with skepticism in developing economies due to instability and the heavy influence of government. Most firms are highly opportunistic. They rapidly seize windows of opportunity opened up by government regulatory changes, available government concessions, and potential deals with OEM customers or foreign partners. It is characteristic to see many of the large, well-capitalized firms in a country all pursue the same opportunity almost simultaneously. Firms prosper through maintaining flexibility, which allows them to deal with unpredictable changes.

To achieve more advanced development, firms must become more strategic. Greater focus, continuity, and discipline is needed if firms are to gain a real competitive advantage even though opportunities may still abound. In nations such as Chile and Brazil, for example, profitable deals are numerous everywhere, but choices are essential if companies are to make the transition to more sophisticated competition. In advanced economies, the need for explicit long term strategies is even greater. Only through sustained strategies can companies assemble the truly unique skills, build the unique customer franchises, and operate at a level of productivity and innovation necessary to support high wages and profits.

Creating distinctive, long term competitive positions. In developing economies, firms compete on price with me-too strategies. Given the perception of a small available market, firms are prone to produce many if not all product varieties and attempt to serve virtually all customers. The aim is to attain the largest local market share possible. As noted earlier, opening up new segments and expanding the market is rare.

While improving operational effectiveness is a first step in moving beyond this mode of competition, this by itself is not sufficient. The essence of strategic positioning is making choices or tradeoffs about the unique way a company will deliver value to its customers compared to competitors.[18] Firms must establish clear competitive positions with distinctive brand reputations. Activities in the value chain must become increasingly tailored to the firm's unique strategy. Positioning competition is a more positive-sum form of competition in which competitive advantages are more sustainable, customers have

more real choices, and the market expands. Firms with distinctive strategies are better placed to compete regionally and globally. The need for distinctive strategies is greatest in advanced economies, where me-too strategies will fail against imitators from lower wage countries.

Raising the investment intensity of competing. More productive operating practices and more distinctive strategies require sustained investment in not only equipment but also "soft" assets such as human capital, R&D, and market development. Yet companies in developing countries tend to have short time horizons, and investments consist largely of productive capacity and working capital.

Initially, stepped-up investments normally must focus on basic employee training, modern equipment and information systems, and the capacity to assimilate new technology. Over time, further investments will be needed in opening up marketing channels, building brands, and improving products and processes. In advanced economies, investment must grow in building true innovation capacity and upgrading the skills of employees to support high wages.

Building brands and reducing dependence on alliances. In developing countries, the international strategies of most companies involve commodities or OEM agreements. Companies have little or no international brand identity and are often forced to rely heavily on alliance partners (including OEM customers and licensors) for inputs, designs, process technology, and marketing channels.

The challenge is to move to new modes of internationalization, involving widening capabilities in the value chain noted earlier. Companies must begin to build their own brand identity rather than relying on partners' brands. The structure of alliance agreements must also evolve to build capability.

Gaining direct contact with foreign customers and control of international distribution channels. Over time, firms based in developing countries will not be able to improve products, capture acceptable profits, and compete internationally unless they can gain control of foreign distribution and directly access foreign customers. Otherwise, middlemen will bargain away too big a share of the profits and companies will be slow to understand market trends. Companies cannot compete on the basis of innovative products without open channels of communication with sophisticated customers. Finally, control over channels and marketing is often necessary to carve out distinctive strategies.

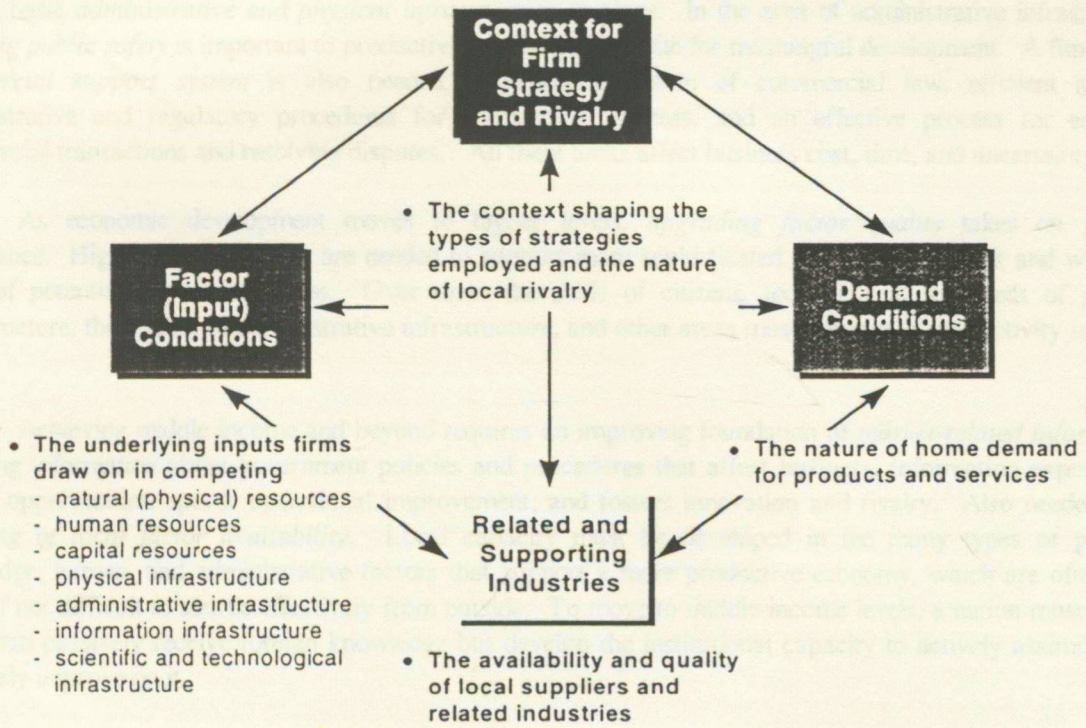
Expanding trade with neighboring countries. Most exports in developing countries are normally destined for advanced economies. This is because other developing countries are either closed to imports or seen as lacking in income to represent significant markets. This focus on advanced markets, however, has major implications for strategy. The only feasible way to compete in advanced markets is often to sell traditional commodities, supply OEM contracts, or compete on price and factor costs, leaving marketing to others.

Expanding trade with neighbors and within regions is an important way to build strengths and prepare for growing international competition. Efforts to regionalize should begin with product lines in which the company has a unique product or cost structure. In Chile, for example, the penetration of supermarkets is the highest in Latin America, the industry is very advanced, and companies such as Santa Isabel are rapidly building positions in supermarkets elsewhere in South America. Sales efforts should target other country markets with similar needs, as well as countries where the firm can learn from demanding customers. International activities must move beyond pure exports to include sourcing, foreign locations, and eventually, a regional or global approach to production or service delivery. International activities not only build volume but also accelerate learning.

Upgrading the National Business Environment

All these company transitions depend on parallel changes in the microeconomic business environment. Capturing the nature of the business environment at the microeconomic level is challenging, given the myriad of locational influences on productivity. In *The Competitive Advantage of Nations*, I modeled the effect of location on competition via four interrelated influences graphically depicted as a diamond (see **Figure 2**).

Figure 2 National (State, City) Business Environment



Economic development is the long term process of building this array of interdependent microeconomic capabilities and incentives to support more advanced forms of competition. It must continue even for advanced economies or their incomes will stagnate. Successful development involves steps that must be sequenced as the sophistication of the economy grows. Government, other institutions, and the private sector must all play a sustained role in making the necessary changes, a subject I will return to later.

Here I can only sketch the sequence of microeconomic changes that accompany development, drawing on the body of research referred to earlier. This will serve to lay the groundwork for the variable that I will investigate in the statistical analysis.

Factor conditions. Factor conditions refer to the basic inputs that allow competition to take place. They range from tangible things, such as physical infrastructure to less tangible resources such as information and university research institutes that firms draw upon in competing. Basic inputs, and those that are generic across many industries, can be a source of competitive disadvantage but rarely constitute a competitive advantage because many locations have them. To increase productivity, factor inputs must improve in efficiency, quality, and, ultimately, specialization to particular cluster areas.

Successful economic development requires putting in place the array of factors needed for increasingly sophisticated (and productive) competition. While the accumulation of factors is necessary, the *path and composition* of accumulation takes precedence over the sheer quantity of factors developed. Clearly, a preoccupation with factor accumulation is misguided in a world where many factors can be sourced internationally. Various factors must be developed or improved *in sequence* or firms will lack the types of inputs that correspond to their state of competition, and deficiencies in more basic factors will undermine the value of more advanced ones.

Early steps needed to move beyond dependence on natural resources and cheap labor revolve around putting basic *administrative and physical infrastructure* in place. In the area of administrative infrastructure, *ensuring public safety* is important to productivity and a prerequisite for meaningful development. A functioning *commercial support system* is also needed, including a system of commercial law, efficient and fair administrative and regulatory procedures for conducting business, and an effective process for enforcing commercial transactions and resolving disputes. All these areas affect business cost, time, and uncertainty.[19]

As economic development moves to higher levels, *upgrading factor quality* takes on growing importance. Higher-quality factors are needed to support more sophisticated company strategies and widen the array of potential export industries. Over time, the skills of citizens, technological standards of physical infrastructure, the quality of administrative infrastructure, and other areas must improve if productivity is to rise.

Achieving middle income and beyond requires an improving foundation of *market-related information*, including information about government policies and procedures that affect business. Information exposes new market opportunities, speeds operational improvement, and fosters innovation and rivalry. Also needed is the *widening of local factor availability*. Local capacity must be developed in the many types of physical, knowledge, human, and administrative factors that support a more productive economy, which are often more costly if not difficult to source effectively from outside. To move to middle-income levels, a nation must also do more than passively receive foreign knowledge but develop the institutional capacity to actively assimilate and ultimately improve on it.

While external sources of capital will flow to a country that is demonstrating progress on the microeconomic fundamentals, foreign capital flows are greatly enhanced by *open, well-regulated, and efficient local banking and capital markets*. These bring down the spread between the cost of funds and the cost of capital to businesses and help ensure that capital flows to the most productive uses. An *ample pool of local savings* is beneficial to bring down the costs of funds, capture returns to capital within the economy, and dampen the volatility that often accompanies international funds flows. Pension reform, among other policies, can play a major role in the rate of national saving.

Finally, to reach advanced development, the last step in factor upgrading is *increasing the specialization of factors* around industry clusters. Achieving very high levels of productivity depends on the presence of highly specialized pools of skills, applied technology, infrastructure, and even sources of capital that are tailored to the needs of particular industries, required to support true innovation. What sets the United States apart from other nations in 1998, for example, is the sheer depth and breadth of specialized skills and scientific and technical institutions.

As development proceeds, *selective disadvantages* in the more basic factors, such as rising wages, local raw material shortages, and resource depletion can begin to trigger innovation and foster successive waves of productivity growth, provided there is improvement in the other microeconomic foundations. In the Netherlands, for example, scarce land and a poor climate has led to innovations in such areas as intensive greenhouse cultivation methods and handling techniques for cut flowers, where the Dutch hold more than 60% of world

exports. It is important that nations do not attempt to artificially hold down the prices of labor, capital, resources, or energy which will only work against productivity improvement and postpone sustainable development.

The context for strategy and rivalry. The context for firm strategy and rivalry refers to the rules, incentives, and norms governing the type and intensity of local rivalry. Less developed economies tend to have little local rivalry. Moving to an advanced economy requires that vigorous local rivalry develops and shifts from input costs and imitation to process efficiency and ultimately to innovation and differentiation. Intense local rivalry is a *sine qua non* of attaining middle and advanced development.[20]

The context for strategy and rivalry can be divided into two primary dimensions. One is the climate for investment in its various forms which is necessary to support more sophisticated means of competition and higher levels of productivity. The structure of the tax system, the corporate governance system, labor market policies affecting the incentives for workforce development, and intellectual property rules and their enforcement, among other things affect the context for investment.

The other crucial part of the context for strategy and rivalry are local policies affecting competition itself. Such areas as trade and foreign investment policy, government ownership and licensing rules, and antitrust policy have a vital role in setting the intensity of local rivalry.

Early progress depends on some level of political and macroeconomic stability which is needed if there is to be long term investment. At the micro level, an early requirement for development is to begin an *irreversible process of opening the economy to imports* and to *foreign investment*. Opening contributes to the political will to achieve internal rivalry.

At the same time or even before external opening is well underway, nations must work to *eliminate government or other impediments to internal competition* throughout the economy. Firms must have the opportunity and the necessity to compete internally to prepare themselves for external competition. This means phasing out monopoly government licenses and concessions, government price controls, entry controls, and locational restrictions, opening state monopolies to competition, and ultimately privatizing state-owned companies. It also requires eliminating corruption, nepotism, and other practices that skew competitive outcomes from those based on productivity.

Sustained economic development also depends *on reducing investment hurdle rates, lengthening time horizons*, and establishing a functioning *corporate governance system*. For example, labor markets must be structured to link jobs and pay with ability, give employers a rationale to train employees, and maintain flexibility. Meeting these labor market tests can remain an obstacle to progress even for wealthy economies, as in western Europe. An effective corporate governance system is also needed to create accountability and ensure that capital is flowing to productive uses. The lack of effective corporate governance is a large part of the problem in Asian economies such as Korea and Thailand.

Sustained investment and upgrading also requires *protection of intellectual property*. Intellectual property protection is necessary even in the earlier stages of development to attract foreign technology, imports of sophisticated inputs, and more advanced foreign investments to a nation. Over time, protection of intellectual property is also important to allow local companies to move to more innovative forms of competition requiring investments to create unique product designs, upgrade technologies, and develop brands.

Ultimately, *vigorous internal rivalry* must develop. Opening the market to imports alone is not sufficient to achieve sustained economic development. The presence of locally based rivals, whether domestically

or foreign owned, is needed not only to stimulate vigorous rivalry but also to foster positive externalities in the business environment.[21]

In wealthy economies, the challenge is to maintain the vitality of rivalry. Doing so seems to require healthy new business formation and the growth of entrepreneurial companies that shake up established rivals. This is perhaps the greatest single competitive advantage of the United States. Highly developed sources of private equity capital and a system that rewards risk taking become governing in advanced economies.

Demand conditions. The process of economic upgrading requires that firms develop the capacity to improve product quality, offer up-to-date features, and, ultimately, create unique products and services. In advanced economies, firms do not just respond to international markets but ultimately lead them. Demand conditions at home—local market needs and buying behavior—have a strong influence on this process. Sophisticated and demanding customers at home press firms to improve and offer insights into existing and future customer needs that are hard to gain in foreign markets. Local demand also reveals segments of the market where firms can differentiate themselves.

In early stage development, local demand is unsophisticated and a nation's exports are largely commodities. Product and service designs are imitated or licensed from abroad. With low incomes, little information, limited selection and lax or non-existent standards, local buyers accept inferior products. Any sophisticated demand comes from *foreign* markets. Indeed, in lower-income countries, a large home market often works against competitiveness in an industry, by mitigating the need to improve quality and the challenge of competing in foreign markets.

As development proceeds, however, this state of affairs soon becomes limiting. Increasingly demanding and sophisticated buyers are needed. Early development priorities on the demand side relate to reducing demand-side disadvantages. *Opening the market to foreign products* (both imported and locally produced) is an important step to foster local buyer learning and choice. Entry by multinationals serves to upgrade local industrial demand because they become sophisticated customers for local supplying companies. Local demand conditions must also begin to improve. Policies to *expand buyer information and buyer recourse* against producers of shoddy or misrepresented products work to improve product value and service.

Sustained economic development is also fostered by *opening trade with neighboring countries*. Trade with neighbors is an important stepping stone for internationalization and company learning. Firms expand direct customer contact in a widening array of industries not just traditional export products.

To support further upgrading, *product, safety, health, and environmental standards* in the nation must be raised steadily toward world standards. While weak regulatory standards are often seen as advantages for poor countries, they actually work against economic development in the long run by slowing the introduction of more advanced technologies and the transition to higher value product varieties. A case in point is environmental regulation. Most forms of pollution represent inefficiency and underdeveloped technology, which is manifested in underutilized raw materials, resource depletion, incomplete energy usage, low value products, and wasted packaging. Lax environmental standards sanction these forms of competition and impose high costs on government to deal with reclamation or cleanup. Improving environmental performance and improving productivity, then, go hand in hand.[22]

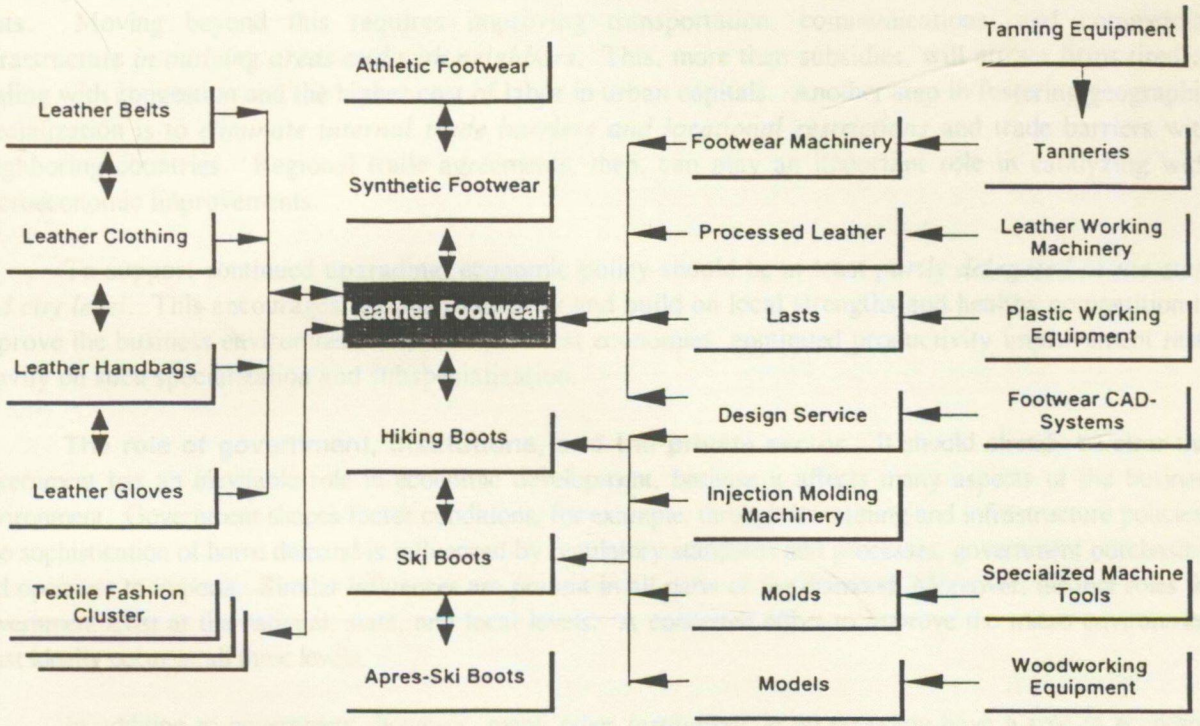
Finally, advanced development is fostered by policies that *open and encourage early demand for new products and services, as well as products of the highest quality*. This involves a regulatory environment open to new products and new technologies rather than biased against them. In mobile communications, the unusual

success by Scandinavian firms such as Ericsson and Nokia owes much to the fact that Scandinavian governments embraced wireless technology early as a cost effective solution for spread out populations.

Ultimately, rising incomes, a growing middle class, and increasingly strict product, safety, health, and environmental standards, combined with intense local rivalry, begin to create a self-reinforcing process in which home demand upgrades. One competitive industry becomes a sophisticated buyer for others. Advanced development is achieved when sophisticated home demand has emerged in a nation in a wide array of products, and cutting edge demand is present in a number of important fields. The challenge in wealthy economies is to keep raising standards, embracing new needs, and maintaining openness in government and institutions to new ways of doing things.

Related and supporting industries and the development of clusters. Achieving rising levels of productivity and more sophisticated strategies requires improving local access to suppliers of materials, components, machinery, services, and information. Most of these items are produced by firms, while some are provided by institutions such as governmental entities and technical schools. While international sourcing is possible, local sourcing from capable suppliers can enhance productivity and especially improve the capacity for innovation and the rate of productivity improvement.[23] Local access to related industries, sharing technology, channels, and customers can offer similar benefits. As economies develop, the growth and deepening of *clusters* become increasingly important. Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g, universities, standards agencies, trade associations) in particular fields that arise in nations or even states or cities within nations (see **Figure 3**).[24]

Figure 3 The Italian Footwear Cluster



Source: Research by Claas van der Linde, 1993

In early stage development, supporting industries are scarce and, if they exist, uncompetitive.[25] Early in the development process, a nation must begin to *open access to foreign suppliers of sophisticated components, machinery, and services*. This allows learning and productivity enhancement while beginning to neutralize the disadvantages of absent or uncompetitive local suppliers. To move to middle-income levels, however, a *local supplier base must begin to form*, first in the more basic components, equipment and services needed by local industries, and later in more sophisticated areas. As development proceeds, local supplier *quality* becomes increasingly important. Not only are more advanced components, machinery, and services required for more sophisticated strategies, but local suppliers become more important in supporting product and process innovation.

To reach high income levels, *the formation of extensive clusters* becomes increasingly necessary, involving not just suppliers but related industries and specialized institutions. Cluster formation often proceeds endogenously, but government, local institutions, and collective private-sector bodies such as trade associations can play an important role in the process.[26] The rate of cluster deepening and upgrading separates the wealthiest economies from others.

Geographic concentration and trade within nations and regions. While the importance of international trade and investment for national productivity growth is widely recognized, the role of *internal trade* and *trade with immediate neighboring countries* is often ignored. High levels of cluster specialization and trade among states and nearby countries is a striking feature of the most advanced national economies.

In early stage development, economic activity tends to concentrate around large capital cities because of the absence of institutions and inefficient infrastructure in outlying areas and with the intrusive role of government in competition. Economic concentration creates congestion and high administrative costs. Moving beyond this requires improving transportation, communications, and commercial infrastructure *in outlying areas and with neighbors*. This, more than subsidies, will attract firms tired of dealing with congestion and the higher cost of labor in urban capitals. Another step in fostering geographic specialization is to *eliminate internal trade barriers and locational restrictions* and trade barriers with neighboring countries. Regional trade agreements, then, can play an important role in catalyzing wide microeconomic improvements.

To support continued upgrading, economic policy should be at least *partly delegated to the state and city level*. This encourages regions to identify and build on local strengths and healthy competition to improve the business environment. In the wealthiest economies, continued productivity improvement rests heavily on such specialization and subspecialization.

The role of government, institutions, and the private sector. It should already be clear that government has an inevitable role in economic development, because it affects many aspects of the business environment. Government shapes factor conditions, for example, through its training and infrastructure policies. The sophistication of home demand is influenced by regulatory standards and processes, government purchasing, and openness to imports. Similar influences are present in all parts of the diamond. Moreover, distinct roles for government exist at the national, state, and local levels. A concerted effort to improve the micro environment must ideally occur at all three levels.

In addition to government, however, many other *institutions* in an economy have a role in economic development. Universities, schools, infrastructure providers, standard-setting agencies, and a myriad of others contribute in some way to the microeconomic business environment. Such institutions must proliferate and improve in quality to support more productive modes of competition.

Finally, the private sector itself is not only a consumer of the business environment but can and must play a role in shaping it. Individual firms can take steps such as establishing schools, attracting suppliers, or defining standards that not only benefit them but improve the overall environment for competing. Collective industry bodies, such as trade associations and chambers of commerce, also have important roles to play in improving infrastructure, upgrading training institutions, and the like, that are not often recognized.

The Process of Development

Successful economic development is a process of successive upgrading, in which the business environment in a nation evolves to support increasingly sophisticated and productive ways of competing. Nations at different levels of development face distinctly different challenges.

At lower-income levels, companies are relying primarily on low-cost labor and natural resources. Early progress must take place in macroeconomic stability, basic factor conditions (e.g., administrative and physical infrastructure), product safety and other standards, openness to trade and foreign investment, and removing restraints to internal competition. To move through middle-income levels, more parts of the diamond become important—suppliers, information, technological infrastructure, buyer sophistication, true local rivalry. To reach high-income levels, cluster formation and geographic specialization are needed to support competition of growing sophistication, together with vigorous local rivalry. Accompanying improvements in the supply of specialized factors, national scientific capability, risk capital, and administrative/regulatory simplicity are needed to realize very high levels of productivity.

An understanding of the microeconomic foundations sheds further light on why opening an economy to trade and foreign investment is so important.[27] Trade is often the first form of competitive pressure (context for strategy and rivalry). Growing access to imports mitigates weaknesses in local suppliers (related and supporting industries) and helps make local customers more demanding (demand conditions). Foreign direct investment continues this process inside the national economy itself, while fostering inward flows of best practices and technology. Opening also creates pressures to address infrastructure and other national deficiencies.

Seeing development in terms of a sequential process of building interdependent microeconomic capabilities, shifting and improving incentives, and competing with evolving strategies also exposes important pitfalls in economic policy. The influence of one part of the microeconomic business environment depends on others. Lack of improvement in any important area can lead to a plateau in productivity growth and stalled development.

There must be alignment between the competitive environment and the capacities and needs of companies. Government must anticipate (because of the lead times involved) and put in place somewhat ahead of time the infrastructure, institutions, and policies needed for the next level of competition. Yet moving too far ahead of firms' strategies and capabilities will not only deprive them of the types of inputs and supporting conditions they really need, but confuse and demoralize the nation's institutions and citizens. Highly trained engineers will not find jobs, for example, unless firms are ready for skill-based strategies; research institutes will sit idle until firms are ready to shift from imitation towards innovation. Not only will investments fail to bear fruit, but confidence in the entire development agenda can be undermined.

This analysis also begins to reveal why macroeconomic policy alone is insufficient. Macro policies that foster high rates of capital investment are beneficial, for example, but this alone will not translate into rising productivity unless the specific forms of investment are appropriate, if available skills and supporting industries are sufficient to make the investments efficient, and competitive and corporate governance pressures are strong enough to provide enough market discipline. High rates of public investment in schooling will not ultimately pay off unless a nation's microeconomic circumstances create the demand for skill in companies, and appropriate institutions and practices are present to translate general education into specialized business knowledge. Removing distortions in exchange rates and other prices eliminates impediments to productivity, but micro foundations must be in place if productivity is actually to increase. The prudence of foreign debt levels depends on what the capital is invested in and the microeconomic fundamentals surrounding its investment and governance. Regulating overall debt levels is less important, in many ways, than improving the micro foundations.

A whole series of micro underpinnings are necessary, then, if sound policies at the macro level are to translate into more productive outcomes. Moreover, these micro underpinnings are a moving target if countries aspire to significant improvements in national prosperity. Investigating these microeconomic foundations statistically is the subject of the next chapter.

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ENDNOTES

[1] Gregory Bond and Steven Yonish played a major role in the statistical analyses reported in this article, with special thanks to Andrew Warner for both his contribution to compiling the data and his thoughtful comments. Felipe Larraín B., Anita McGahan, Jan Rivkin, and Scott Stern provided helpful comments. This article draws from a book in progress, *Competing for Prosperity: the Microeconomic Foundations of Economic Development*. The ideas build on the framework first described in Porter (1990) and developed in a series of subsequent studies and papers. This line of research has benefited greatly from joint work and discussions with Michael Enright, Michael Fairbanks, Pankaj Ghemawat, Veronica Ingham, Tarun Khanna, Stace Lindsay, Lucia Marshall, U. Srinivasa Rangan, Mariko Sakakibara, Dawn Sylvester, Hirotaka Takeuchi, and Claas van der Linde.

[2] See Solow (1956), Lucas (1988), Romer (1990), Barro (1991), and Mankiw, Romer and Weil (1992).

[3] Mankiw (1995) raises some of these issues. Many of the variables used in growth models are not exogenous but jointly determined with growth, and may be caused by unmeasured other variables. Causality, then, is ambiguous.

[4] Porter (1990).

[5] The same issues apply to cities, states, or regions within nations. This discussion will be primarily set at the level of the nation, although internal specialization and trade among states within larger nations proves to be an important determinant of prosperity.

[6] Producing more units per day of products or services that command lower prices may not support rising wages.

[7] National productivity is a function not only of the productivity of those working but also of the proportion of a nation's citizens who want to be or can be productively employed. This means that a healthy rate of overall economic growth is important to absorb unemployed workers and workers freed up by productivity improvement in established businesses.

[8] The mere possession or accumulation of factors (resources) is insufficient. Many nations have become part of the global economy that have pools of unskilled workers or natural resources, and such basic factors can be readily accessed through markets or via global networks. Advancing technology is also reducing resource and unskilled labor intensity, rendering these factors less valuable. Unless factors are deployed with rising productivity, a nation's standard of living will languish.

[9] See, for example, North (1990). I explore here the nature of the institutions and institutional changes that support rising productivity.

[10] National income also arises from payments to domestic holders of natural resources, including fees or levies paid to government. Earning higher rents on natural resources contributes to national income but can work against improving wages and returns to capital if higher resource payments drive up unit input costs. A strategy of raising domestic resource prices can undermine prosperity, then, unless productivity improvements are offsetting.

[11] This analysis simplifies some issues such as whether capital is sourced domestically or internationally, and the fact that borrowing costs contribute to some extent to national income independently of the wages and profits of financial institutions. The simplifications do not change the implications of the analysis for economic development.

[12] Or high returns to only a few because of the presence of protection and monopolies.

[13] Successful development also requires a fair division of productivity improvements between workers and shareholders. Without it, workers' incentives and willingness to participate in upgrading is diminished. Workers and their unions will resist change, favor redistribution over growth, and exert their political power to secure these aims and insulate themselves from competition. The dynamic process of productivity improvement and expanding the pie is undermined. Open local competition together with appropriate capital market incentives and practices are essential to a division of the pie that supports economic development rather than ultimately undermining it. For a discussion of the capital allocation issues, see Competitiveness Policy Council (1995).

[14] See Porter (1996).

[15] Hall and Jones (1998) begin to get at some of these issues in their notion of social infrastructure, defined as the institutions and government policies that constitute the national economic environment. They include dimensions such as openness to international trade, government anti-diversion policy, distance from the equator, fraction of population speaking English or a western European language, and trade share of GDP. Here, I seek to make the business environment more concrete and tie it to the proximate sources of business productivity.

[16] Gridlock is especially likely in poor countries where there has been an overreliance on government initiative and where business interests have prospered because of monopoly, protection, and subsidies. Competitive pressures, both from outside and inside, are important to break out of old equilibria.

[17] For references, see Porter (1998a) and Porter (1998b).

[18] See Porter (1996).

[19] Legal systems, property rights, and the like are the subject of an extensive literature, unlike most of the other areas discussed here.

[20] For a recent empirical study that finds a strong association between the intensity of local rivalry, measured by local market share fluctuations, and international competitive success, measured by world export share, see Sakakibara and Porter (1998).

[21] The presence of active local competition, coupled with a supportive investment climate, has another important benefit. It helps ensure that workers gain a share of the fruits of improving productivity. Widespread competition increases the chances that greater skills and higher productivity of workers are sought after and will be rewarded via higher wages and benefits.

[22] See Porter and van der Linde (1995).

[23] For a detailed treatment, see Porter (1998b).

[24] See Porter (1998b).

[25] The need to rely on unproductive local suppliers creates disadvantages for downstream industries. A national policy of protection or state ownership of industries with strong inter-industry linkages, a notion growing out of past development thinking, only compounds these supplier problems. The absence of efficient suppliers, coupled often with restraints on imports, forces local firms into inefficient vertical integration, which diverts scarce resources and limits the flexibility to modify and improve products and services. See Hirschman (1958). Because of pervasive supplier disadvantages, the early export successes in developing countries often occur in industries with *weak* inter-industry linkages but favorable basic factor conditions.

[26] Porter (1998b).

[27] Sachs and Warner (1995) find a strong association between opening and national income growth.

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Part Two: Measuring The Microeconomic Foundations of Economic Development[1]

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In order to examine the relationship between the microeconomic foundations of development and the prosperity of national economies, I devised a set of special questions that was included in this year's Executive Survey of *The Global Competitiveness Report*.[2] The survey represents the first opportunity to explore the microeconomic underpinnings of competitiveness and economic development systematically across a broad sample of countries.

The special questions covered seven dimensions of company operations and strategy, and nine dimensions of the national microeconomic business environment, all areas where statistical data was unavailable.[3] The company variables in the special survey addressed the company transitions described earlier, supplemented with a previously included question measuring attention to staff training, one indicator of the investment intensity of competition.

The special questions on the microeconomic business environment focused on the important parts of the diamond, including demand conditions, related and supporting industries, local rivalry, and information infrastructure that have not been emphasized in traditional theories. In addition to the special questions, I drew on a number of previously included survey questions on more conventional areas such as physical infrastructure, administrative infrastructure, human resources, science and technology infrastructure, capital markets, intellectual property protection, and openness to international trade and investment. I avoided questions that were *de facto* measures of productivity such as questions on the efficiency of production processes, the productivity of workers, and overall country leadership in technology. To complete the model, I also examined the influence of some macroeconomic variables suggested by growth theory.

The Data

Respondents to the survey were senior business leaders and government officials. For each question, endpoints in terms of the dimension of company operations and strategy or the aspect of the national business environment were specified. Answers could fall into seven gradations from lowest to highest. This relatively small number of gradations, in contrast to a continuous variable, limited the variance in answers on a given question.[4] The questions on company operations and strategy and those on the microeconomic business environment were interspersed in the actual survey. Questions on the same aspect of the business environment were also separated in the survey to increase the chances of obtaining independent answers.

The number of responses for nearly all countries numbered in the dozens per country or higher, and the variance of responses within countries was manageable.[5] In the few cases where hard data could be checked against the survey responses, the correlations were reassuringly high. For example, the survey-based Computer Utilization (question 9.15) has a high and statistically significant correlation with the number of computers per 1,000 persons (σ=0.88, $p<0.001$).[6] Although the quality of survey data has inevitable limits which must be taken into account when interpreting the results, the respondents to the survey appear to be relatively objective and knowledgeable observers of their country's economy.

Adequate survey data was obtained for a sample of 52 countries, ranging from Vietnam, China, and India with low levels of per capita income to the advanced industrial economies such as the United States.[7] All OECD countries were included, along with a cross section of others. It is fair to say, however,

that the poorest countries were underrepresented. The countries included in my analysis are shown in **Table 3**, along with their 1996 GDP per capita.[8]

The dependent variables used in the analysis were the level of GDP per capita for 1996, adjusted for purchasing power parity, and, to a lesser extent, the growth in GDP per capita over the 1991-1996 period. GDP per capita is the broadest measure of national productivity and clearly linked to standard of living.[9] GDP per capita for 1996 was utilized because reliable 1997 data is just becoming available. Though the actual survey was administered in early 1998, the microeconomic variables measured in the survey should change only slowly over time.

My primary focus was on the level of GDP per capita because my theory relates directly to the microeconomic foundations of current productivity, which should be determined by the current state of company sophistication and the current quality of the business environment. However, many of the microeconomic variables also bear directly on the rate of productivity growth, such as the intensity of local rivalry and the purchasing sophistication of buyers. While only one year of data prevented me from examining how change in microeconomic foundations affected growth, I did explore in a preliminary way the relationship between the microeconomic foundations and the rate of GDP per capita growth under the assumption that most of the microeconomic variables change only slowly.

Microeconomic Foundations and the Level of GDP Per Capita

Table 1 presents the bivariate relationships between the microeconomic variables and GDP per capita. The variables are grouped into measures of company operations and strategy and measures of the national business environment. Attributes of the microeconomic business environment are further grouped by part of the diamond. The variables numbered with a nine are those from my special survey. Included in the table is the regression slope, an indication of statistical significance, and the adjusted R^2 (or proportion of variation in GDP per capita explained).[10] The slope can be interpreted as the increment to GDP per capita from an increase of one gradation on the seven point scale of answers to the associated survey question.

All the variables in **Table 1** are statistically significant in the full sample with the exception of the extent of locally based competitors, which has a more complex relationship with GDP per capita.[11] Among the company variables, the nature of competitive advantage, capacity for innovation, and control of international distribution are especially striking in the proportion of the variance in per capita GDP explained. The nature of competitive advantage measures the extent to which the advantage of companies in the country is drawn from cheap labor or resources on one end of the spectrum and innovative products and processes on the other.

Among the microeconomic business environment measures, demand conditions, related and supporting industries, and information infrastructure are also highly associated with per capita GDP, as are the quality of logistical infrastructure, freedom from irregular payments, and intellectual property protection (questions drawn from the full survey). All significant variables have the expected positive sign. Overall, the results provide strong support for the relationship between microeconomic foundations and economic performance, both in terms of company operations and strategy and the national business environment. The results also provide support for diamond theory and its broad view of the microeconomic determinants of productivity.

Some overall findings merit discussion. First, factor conditions (IIA), the focus of much previous literature, are significant but far from dominating. Traditional factor accumulation (human resources, capital, scientific infrastructure) appears less potent than putting in place the "new" infrastructure in information and communications.[12] Business information availability, highlighted in diamond theory, is

highly significant. Second, demand conditions (IIB) and related and supporting industries (IIC) perform particularly strongly. The quantity of local suppliers and especially local supplier quality both matter. Thus there is an important role for local clusters, challenging the argument that the possibility of global outsourcing has eliminated the local role in competitive advantage. Third, the presence of demanding regulatory standards is strongly associated with per capita GDP. This is further evidence that demanding regulatory standards do not prevent competitiveness but are associated with higher productivity.[13] Fourth, there is a potent role for the context for strategy and rivalry (IID), and robust findings on the importance of local rivalry that will become even clearer in explaining per capita GDP growth and the results for countries at different stages of development. Finally, the extent of regional trade has a strong influence, especially in developing countries.

For some variables, such as buyer sophistication, one could argue causality in the reverse direction. Buyer sophistication, for example, could be the result of high per capita GDP and not the cause. The survey questions were worded to avoid spurious reverse causality—for example, the buyer sophistication question stressed the sophistication and the nature of the buying process rather than the financial capacity of buyers to purchase expensive products.[14] However, the results based on a single survey cannot establish causality.

Although causality remains ambiguous for some variables, the findings point to important microeconomic changes that occur with development. While there may be some natural tendency for some microeconomic conditions to improve as GDP per capita grows, the improvement appears to be far from automatic. In all areas, the rate of microeconomic improvement can be affected markedly by purposeful action in both government and the private sector.

To explore the collective impact of the variables, I employed common factor analysis.[15] This provided a single composite picture of the relative microeconomic competitiveness of each country, weighing all the variables. Many of the individual variables are collinear, and the individual impact of particular variables cannot be statistically distinguished due to the relatively small sample size.

Two factor analyses were conducted, one with only the special survey questions and the other with the broader set of survey variables. In both analyses, one dominant factor was present which captured 85% and 66% of the covariance among the variables respectively.[16] The company dimensions and the elements of the microeconomic business environment tend to *move together as a system*, one of the central tenets of diamond theory. This is particularly striking for the special survey questions which measure the central aspects of the business environment.[17]

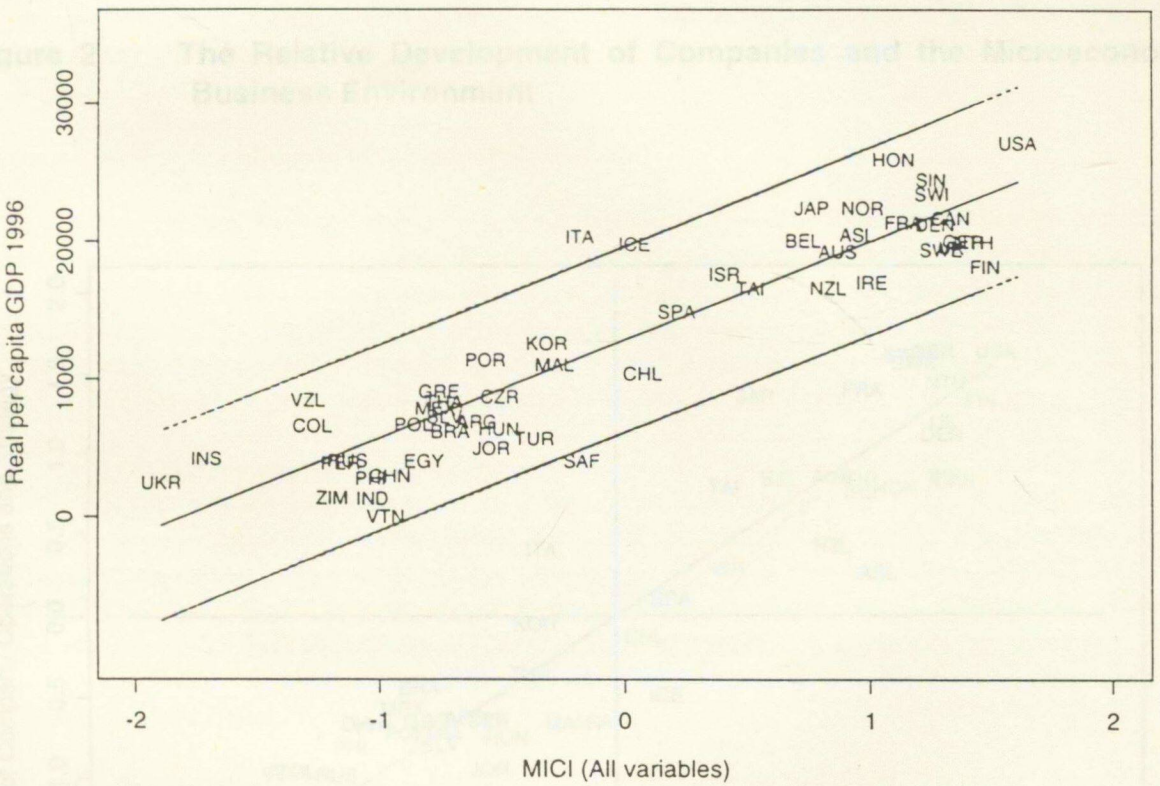
Regressing GDP per capita on the factors explains a remarkable 82.4% of the variance in each case. A strong relationship between the microeconomic environment and GDP per capita is evident. Interestingly, the factor drawn from only the survey questions explains virtually all the variation that the broader set of variables does.

The factor score can be interpreted as a microeconomic competitiveness index (MICI). Note that this index is of a different sort than the Competitiveness Index, because it focuses exclusively on microeconomic variables and addresses the level of GDP per capita and not its rate of growth. **Figure 1** plots MICI against 1996 GDP per capita for each country in the sample. The line in the middle is the regression line, while the dotted lines above and below delineate the 95% confidence forecast region.[18]

Countries lying above the regression line are those whose GDP per capita exceeds that predicted by their microeconomic foundations, as measured by the factor. Countries below the line are those whose microeconomic foundations are stronger than current GDP per capita. Countries currently *overperforming* their measured microeconomic foundations include Italy and Iceland, farthest above the line, as well as

Hong Kong, Venezuela, Japan, Singapore, Portugal, and Norway. It is difficult to characterize these as a group. Several of the countries (e.g., Venezuela, Norway, Iceland) have unusual resource endowments that may yield unsustainable income levels. Hong Kong and Singapore are regional trading centers with strength in infrastructure but weaknesses in institutions and company practices relative to other nations at their income levels. Italy's microeconomic business environment is eroded by conditions in the south.[19]

Figure 1 The Relationship Between MICI and GDP Per Capita



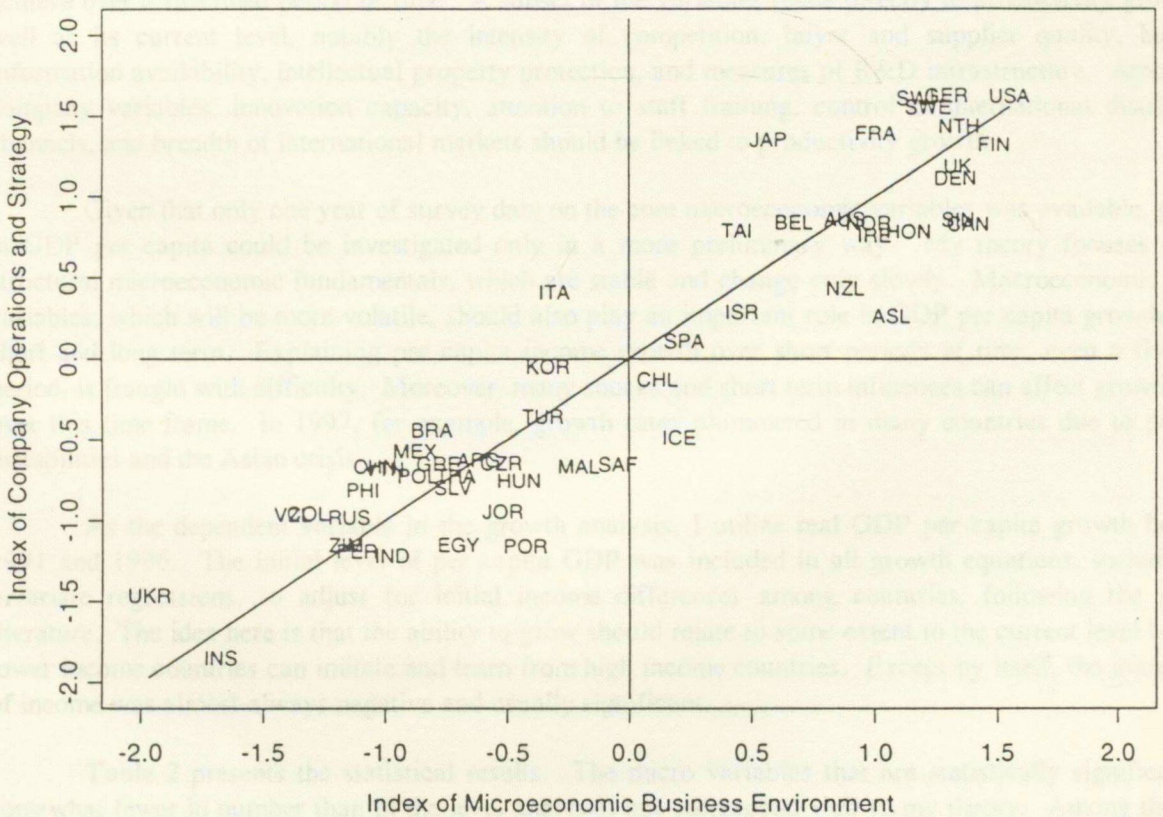
Countries currently *underperforming* their microeconomic fundamentals include South Africa, Vietnam, India, Turkey, China, Finland, Germany, and Chile. South Africa and Turkey are coping with unusual political challenges. Germany has faced the economic discontinuity of unification. The performance of China and India may be pulled down by the large populations outside the mainstream economy. In each of these countries, the micro fundamentals are in place to support higher levels of GDP per capita. If micro foundations can be preserved (e.g., South Africa, India) or enhanced while macro circumstances improve, my results offer promise for the future.

In interpreting these differences, it is important to remember that the relationship between MICI and GDP per capita is very strong, with only three countries outside the forecast region. It is also notable that the so-called transitional economies—Russia, Poland, Hungary, the Czech Republic, and Ukraine—fall on or close to the regression line. Although transitioning from a different economic system, their GDP per capita appears to be strongly associated with their microeconomic fundamentals.

The microeconomic variables were next grouped into the two categories suggested by my theory: company operations and strategy and microeconomic business environment. For each category of variables, common factor analysis again yielded a single dominant factor. Theory suggests that the company characteristics and business environment should move together. Statistical analysis supports this relationship—the correlation between the two factors is 0.93.[20]

To explore the relative state of companies and the microeconomic business environment in the sample of countries, I plotted the normalized factors against each other in **Figure 2**. Company sophistication is on the vertical axis and business environment on the horizontal axis. Countries lying above the 45 degree line are those whose company development is ahead of the business environment, while those below the line are countries whose environment is more advanced than the state of local companies.

Figure 2 The Relative Development of Companies and the Microeconomic Business Environment



Countries whose companies are ahead of the business environment include Japan and Italy, and to a lesser extent Switzerland, Sweden, France, Korea, Brazil, Venezuela, and Ukraine. Japan and Italy both suffer from serious deficiencies in the business environment, consistent with the findings of this analysis. Countries whose business environment is ahead of company practice include Australia, Iceland, Portugal, Singapore, Canada, and South Africa. Many of these are countries whose leading companies are still heavily involved in natural resource extraction or OEM production despite relatively advanced business conditions.

Current macroeconomic policies should have only an indirect effect on the current *level* of national productivity.[21] However, to explore the relative role of micro and macro, I examined a number of macroeconomic variables drawn from *The Global Competitiveness Report 1997* which were suggested by the economic growth literature, including gross domestic investment (both public and private) as a percent of GDP, national savings as a percent of GDP, government spending as a percent of GDP, an index of exchange rate misalignment, and years of secondary schooling (to capture overall investment in human capital).[22] I use data from 1996, although the levels of these indicators change only slowly over time. It is perhaps not surprising that only national savings (with MICI included) and years of secondary schooling (with or without MICI included) were statistically significant. These make only a modest contribution to explaining the variance in GDP per capita across countries and a small incremental contribution (3%) beyond MICI (these results are not reported). Past and current macro policies have a role in shaping the future microeconomic business environment, however, and we would expect the influence of macro variables to be greater in explaining growth in GDP per capita. This is confirmed in results to be reported.

Microeconomic Foundations and Economic Growth

Microeconomic fundamentals also bear on the rate of growth in productivity that an economy can achieve over a sustained period of time. A subset of the variables relate directly to productivity growth as well as its current level, notably the intensity of competition, buyer and supplier quality, business information availability, intellectual property protection, and measures of R&D infrastructure. Among the company variables, innovation capacity, attention to staff training, control of international distribution channels, and breadth of international markets should be linked to productivity growth.

Given that only one year of survey data on the core microeconomic variables was available, growth in GDP per capita could be investigated only in a more preliminary way. My theory focuses on the structural microeconomic fundamentals, which are stable and change only slowly. Macroeconomic policy variables, which will be more volatile, should also play an important role in GDP per capita growth in the short and long term. Explaining per capita income growth over short periods of time, even a five year period, is fraught with difficulty. Moreover, many shocks and short term influences can affect growth rates over this time frame. In 1997, for example, growth rates plummeted in many countries due to political instabilities and the Asian crisis.

As the dependent variable in the growth analysis, I utilize real GDP per capita growth between 1991 and 1996. The initial level of per capita GDP was included in all growth equations, including all bivariate regressions, to adjust for initial income differences among countries, following the growth literature. The idea here is that the ability to grow should relate to some extent to the current level because lower income countries can imitate and learn from high income countries. Except by itself, the initial level of income was almost always negative and usually significant.

Table 2 presents the statistical results. The micro variables that are statistically significant are somewhat fewer in number than in the level analysis, but correspond well to my theory. Among the most influential single variable is the intensity of local competition, which alone explained 27% of the variance in growth in GDP per capita, controlling for initial level. Other significant variables, in order of appearance in the table, include attention to staff training, control of international distribution channels, breadth of international markets, communications infrastructure quality and cost, personal security, administrative/regulatory burden, business information availability, stock market access, venture capital availability, buyer sophistication, domestic supplier quality, intellectual property protection, prevalence of irregular payments, tariff liberalization, extent of locally based competitors, and effectiveness of antitrust policy. The quality of scientific research institutions is the only statistically significant variable ($p<0.10$) in the analysis to have an unexpected sign. Interestingly, the extent of locally based competitors, which was

not significant in the level equation, has a positive and significant relationship with growth in GDP per capita, where its effect is less ambiguous than with level.

As in the level analysis, I employed common factor analysis to compute a microeconomic growth index (MICI Growth). MICI Growth contains the subset of micro variables that are significant in the bivariate growth regressions. Once again, a dominant factor emerged among the variables that explained 75% of the covariance among them. MICI Growth itself explains 25% of the variance in growth in GDP per capita, controlling for initial level, and is positive (b=4.41) and highly significant ($p<0.001$).[23]

To complete the analysis, I introduced the macroeconomic variables into the growth equation. Macro variables should be important to growth, because they shape the context for microeconomic improvement. As with the microeconomic variables, however, the statistical test is hindered by the lack of historical data. Gross domestic investment, national savings, government spending, and the index of exchange rate misalignment proved significant in explaining growth, with the signs of the government spending and exchange rate variables being negative as expected.[24] The macroeconomic variables as a group explained 22% or 23% of the variance in growth, controlling for initial level.[25]

Combining MICI Growth and the macro variables into a single equation explained 46% or 48% of the variation of growth, controlling for initial income level. Thus the micro and macro variables have roughly equivalent but complementary power. Most of the macro variables are more statistically significant with the microeconomic growth factor included. Macro policies are important to growth, but so are sound micro foundations. Overall, however, the growth analysis must be taken as more preliminary because of the unavailability of time series for both micro and macro variables and the sustainability of growth rates.

Microeconomic Foundations and the State of Development

We would expect the influence of individual variables to differ for countries at very different income (and productivity) levels. The influence of a given variable could be nonlinear or reach a threshold after which it is no longer governing. Different variables are also likely to be controlling at differing productivity levels.

I examined these issues by dividing the countries in the sample into three per capita GDP groups: low, medium, and high.[26] Given the pattern of GDP per capita variation, dividing the sample into three groups of countries rather than two was more appropriate despite the reduction in sample size for statistical purposes.[27] The variance in GDP per capita is much greater for the middle income subgroup than for the high and low income groups, which also affects the statistical power of the analysis. High income countries, in particular, had small percentage differences in GDP per capita. In addition, the variance in responses to some survey questions was modest within the subgroups.

With these limitations in mind, the right-hand side of **Table 1** presents the subgroup analysis. For low income countries, opening the economy to trade and especially foreign investment, reducing corruption, beginning to raise regulatory standards, improving information infrastructure, and improving physical infrastructure (including communications) are the most important influences on GDP per capita.[28] Even in low income countries, traditional factor accumulation proves not nearly as important as the efficiency of communications and computer utilization together with creating an appropriate context for competition. Among companies, beginning to shift from solely competing on cheap labor and natural resources is the crucial priority. Beginning to trade with neighboring countries has a strong influence on national productivity.

Among low income countries, growth in GDP per capita is most strongly linked statistically to communications infrastructure cost and quality, administrative/regulatory burden, openness of public sector contracts, intellectual property protection, tariff liberalization, openness to foreign investors, and the intensity of local competition (these results are not shown). The intensity of local competition, which was not significant in explaining the level of GDP per capita for low income countries, is highly significant in explaining GDP per capita growth. Also significant to GDP per capita growth is the development of locally based rivals.[29] Overall, these results are generally in line with my expectations, and provide strong confirmation of how important it is for developing countries to become part of the international economy. My results suggest that much competition at this stage comes from external sources, while local rivalry measures are positive but not significant.

To make the leap to upper middle income, many more parts of the diamond become important, including advanced physical infrastructure, information infrastructure, access to equity capital, science and technology infrastructure, cluster development (related and supporting industries, demand conditions), and intensity of local competition. All these are statistically significant. At the company level, developing innovation capacity, building international distribution, and broadening international markets take on growing importance in moving to the next level of sophistication.

In the middle income group, virtually all variables are significant with two notable exceptions: regional sales and openness to foreign investors. The middle income group encompasses a huge jump in per capita GDP, which increases statistical power. Among the company variables most related to per capita GDP are the following: the nature of competitive advantage and the capacity for innovation each explained more than 80% of the variance in per capita GDP, the highest of any variables in the medium per capita GDP subsample. Among the national business environment variables, the variables most related to per capita GDP were, in order of appearance in the table, quality of logistical infrastructure, personal security, business information availability, stock market access, public investment in civilian R&D, university-industry research collaboration, buyer sophistication, domestic supplier quality, and intellectual property protection.

Among middle income countries, growth in GDP per capita is most strongly influenced statistically by stock market access, venture capital availability, the extent of locally based competitors, information access, the intensity of rivalry, information access, and improving factor quality.

For countries seeking to move to advanced economies, many of the conditions for becoming middle income countries would be taken as given. The frontiers would rest in advanced infrastructure of all types, risk equity, buyer sophistication, cluster quality, and maintaining the intensity of local rivalry. On the company side, innovative capacity throughout the value chain would be governing.

The statistical results for the high income subgroup were affected by limited variance in income and compression of survey responses, which led again to a smaller number of significant variables than in the middle income subgroup. There was little overlap with the significant variables in the low income group. The intensity of local competition had almost double the explanatory power of the next most significant variable in the high income group, providing strong support for one of the core diamond theory hypotheses. Overall infrastructure quality was also significant, apparently due largely to communications cost (communications cost was the only significant variable common to all three country groups). Also significant for the high income group were administrative/regulatory burden and venture capital availability (but no longer stock market access). None of the company variables was significant, probably because of compression and hence limited variance in the survey responses. Overall, the subgroup results are highly suggestive of a process of economic development which involves a sequential strengthening of microeconomic fundamentals.

For high income countries, the intensity of local rivalry is significant in explaining per capita GDP growth. Also significant is minimizing the administrative/regulatory burden.[30]

Ranking Microeconomic Foundations

I employed MICI to rank countries in terms of their microeconomic foundations (see **Table 3**). The United States comes out the leader, followed by Finland and the Netherlands.[31] It is interesting to compare the MICI ranking to the ranking in the 1997 and 1998 Competitiveness Indexes (the 1997 Index is most comparable because it is based on 1996 data). The Competitiveness Index is focused on growth and encompasses both macroeconomic and microeconomic variables. MICI is exclusively microeconomic and more closely related to GDP per capita level.

The rankings are correlated but exhibit some substantial differences (see **Table 3**). MICI assigns much higher ranks to Germany, Sweden, Finland, France, Italy, Brazil, South Africa, and (compared to the 1998 Index) Israel. The Competitiveness Index assigns much higher ranks to Hong Kong, New Zealand, Taiwan, Chile, Malaysia, Korea, Thailand, Egypt, the Philippines, and Indonesia. It is also worth noting that Japan ranked 18 on microeconomic foundations versus 13 in the recent Competitiveness Index ranking.

Indonesia is the most extreme case, ranked 51 (next to last) in the micro ranking and 14 (1997) and 31 (1998) based on the Competitiveness Index. Almost all of the faltering Asian economies were among the countries that received a lower ranking in terms of microeconomic fundamentals. Nearly all have Competitiveness Index rankings that are slipping.

Overall, of the 11 countries ranking significantly lower on micro, 7 had *falling* Competitiveness Indexes between 1997 and 1998 while three were flat. Only one country, Taiwan, registered an improvement (from 8 to 6). These findings are consistent with the view that a favorable economic growth rate is unsustainable if it outruns a country's micro fundamentals.

Conclusions

Political stability and sound macroeconomic policies have long been considered the cornerstone for achieving a high standard of living. The results here suggest that these are necessary but not sufficient for national prosperity. Parallel improvements in the microeconomic foundations of economic development are needed, rooted in the nature of company operations and strategies and in the microeconomic business environment. I find strong evidence that microeconomic upgrading is a sequential process in which the countries at different levels of development face distinctly different challenges.

Taken as a whole, the results challenge the notion that microeconomic improvement is automatic if proper macroeconomic policies are instituted. While institutions such as the IMF strongly push macro reforms, my findings suggest that micro reforms are equally if not more important. Without micro reforms, moreover, growth in GDP per capita will be unsustainable. Appropriate micro reforms, which will boost productivity and productivity growth, can also greatly ease the challenge of meeting fiscal obligations and reducing macroeconomic distortions.

A greater focus on micro reforms will pay another, essential dividend. While macro reforms almost inevitability inflict hardship in the short and medium term, micro reforms can produce tangible and visible benefits for citizens. Breaking up local cartels and monopolies can lower the cost of food, housing, electricity, telephone service, and other costs of living. Regulatory reform can rapidly begin to ease inefficiencies, reduce pollution, and improve unsafe practices. Improvements in infrastructure can boost

mobility and tangibly ease congestion. Bold steps to improve education and training are particularly important, because they offer the hope of a better life for children. If citizens see businesses reforming themselves and facing challenges, they are more prone to challenge other interest groups and more willing to live with personal sacrifices. The political will and public support to make real economic upgrading is built.

If there is to be continued support for economic reform in nations around the world, there is a pressing need to move to a next level of thinking. Approaches based heavily on macroeconomic adjustment are producing a backlash that erodes support for economic progress and will have questionable long term impact. Political, macroeconomic, and microeconomic policies must be integrated in a more textured view of competitiveness and the sources of sustained prosperity. Any nation can prosper if it can make the choices necessary to improve the foundations of productivity.

Table 1 Bivariate Regression Results, Dependent Variable: 1996 GDP Per Capita

	All Countries (n = 52)		Low (n = 17) (GDP per Capita < $7,000)		Medium (n = 17) (GDP per Capita $7-$19,000)		High (n = 18) (GDP per Capita > $19,000)	
	Slope	Adj. R^2	Slope	Adj. R^2	Slope	Adj. R^2	Slope	Adj. R^2
I. Company Operations & Strategy								
9.07 Nature of Competitive Advantage	5326.0**	0.757	2125.6**	0.193	3474.9**	0.818	416.3	-0.040
9.14 Value Chain Presence	9632.5**	0.533	1510.5	0.021	7631.2**	0.350	1087.9	0.016
6.09 Attention to Staff Training	8522.9**	0.610	182.6	-0.065	4965.3**	0.367	616.8	-0.041
9.06 Capacity for Innovation	7146.2**	0.712	-514.5	-0.054	4346.5**	0.876	598.4	-0.048
9.03 Control of International Distribution	8635.8**	0.681	568.3	-0.050	5171.7**	0.491	1080.4	-0.026
9.04 Extent of Branding	7469.9**	0.498	293.7	-0.063	4145.4**	0.357	-595.9	-0.041
9.10 Breadth of International Markets	10738.1**	0.391	1613.0	0.025	10956.2**	0.430	1101.9	-0.007
9.11 Extent of Regional Sales	7852.4**	0.593	2634.1**	0.335	1285.8	-0.024	1882.3	0.066
II. Quality of the National Business Environment								
A. Factor (Input) Conditions								
1. Physical Infrastructure								
4.01 Overall Infrastructure Quality	5114.6**	0.687	416.2	-0.048	3069.2**	0.379	1126.8*	0.126
a. Basic								
4.02 Road Infrastructure Quality	4187.1**	0.489	-248.9	-0.047	2673.1**	0.293	789.3	0.057
4.09 Power Infrastructure Adequacy	4860.3**	0.508	601.6	0.073	917.1	-0.050	319.0	-0.057
4.03 Railroad Infrastructure Development	2836.9**	0.303	-692.4	0.099	1364.2*	0.141	361.2	-0.011
4.05 Port Infrastructure Quality	4943.3**	0.608	-204.1	-0.059	3740.9**	0.642	701.9	0.023
4.04 Air Transport Infrastructure Quality	5025.7**	0.608	556.7	0.001	2963.7**	0.465	911.1	0.024
b. Advanced								
4.06 Telephone / Fax Infrastructure Quality	6724.9**	0.669	758.5	0.051	5648.4**	0.625	1700.0	-0.014
4.08 International Direct Dial Communications Costs	6404.3**	0.686	1763.4**	0.406	4056.0**	0.446	1701.1*	0.102
4.11 Quality of W'housing, Storage, & Distribution (logistical) Networks	5928.3**	0.767	367.9	-0.048	4511.3**	0.695	1121.8	-0.002
2. Administrative Infrastructure								
8.14 Safeguarding of Personal Security	4307.2**	0.597	-385.0	-0.014	2718.5**	0.702	1540.6	0.067
8.05 Judicial Independence	4304.0**	0.464	-123.8	-0.063	2531.8**	0.589	-53.1	-0.062
8.10 Adequacy of Private Sector Legal Recourse	4578.0**	0.415	48.3	-0.066	2865.7**	0.639	-125.2	-0.061
2.02 Admin. / Regulatory Burden	4475.4**	0.246	895.6	0.044	3217.6**	0.380	1048.0*	0.138
3. Information Infrastructure								
9.02 Business Information Availability	6672.9**	0.742	172.2	-0.065	3860.9**	0.695	1511.0	0.024
9.15 Computer Utilization	9929.8**	0.713	2579.6*	0.158	5547.1**	0.498	1812.6	0.037
4. Capital Availability								
3.01 Financial Market Sophistication	4395.9**	0.530	785.5	0.085	2969.3**	0.592	789.5	0.085
9.16 Stock Market Access	5851.8**	0.447	75.8	-0.066	4467.0**	0.680	1299.4	0.092
3.02 Venture Capital Availability	4576.7**	0.325	-479.9	-0.045	3564.4**	0.648	862.7*	0.122

Note: * denotes $p < 0.10$, ** denotes $p < 0.05$

Table 1 Bivariate Regression Results, Dependent Variable: 1996 GDP Per Capita (continued)

	All Countries (n = 52)		Low (n = 17) (GDP per Capita < $7,000)		Medium (n=17) (GDP per Capita $7-$19,000)		High (n = 18) (GDP per Capita > $19,000)	
	Slope	Adj. R^2	Slope	Adj. R^2	Slope	Adj. R^2	Slope	Adj. R^2
5. Human Resources								
7.05 Quality of Primary and Secondary Education	4371.0**	0.312	-359.2	-0.042	2242.6**	0.331	-30.9	-0.062
7.04 Adequacy of Average Years of Schooling	4591.0**	0.528	-16.3	-0.067	2314.8**	0.388	-491.8	-0.054
5.12 Quality of Scientists & Engineers	4567.7**	0.244	199.2	-0.056	2937.2**	0.276	664.1	-0.032
6.16 Quality of Business Schools	4439.6**	0.284	102.6	-0.064	2781.9**	0.336	407.2	-0.042
6. Science & Technology								
5.04 Public Investment in Non-Military R&D	5611.9**	0.526	-834.8	-0.011	3471.9**	0.741	756.5	0.012
5.03 Quality of Science Research Institutions	4875.9**	0.474	-34.4	-0.066	3225.5**	0.636	334.3	-0.049
5.06 University / Industry Research Collaboration	6958.2**	0.616	711.9	-0.036	3785.8**	0.705	917.0	-0.011
B. Demand Conditions								
9.01 Buyer Sophistication	7220.1**	0.809	-500.0	-0.053	4821.2**	0.700	2073.9	0.022
9.12 Demanding Regulatory Standards	6666.0**	0.756	1910.9**	0.212	4153.3**	0.496	-728.0	-0.039
1.14 Openness of Public Sector Contracts	3516.4**	0.111	820.9	0.048	836.9	-0.041	-372.2	-0.047
C. Related and Supporting Industries								
9.13 Domestic Supplier Quantity	9199.8**	0.674	980.4	0.002	7070.2**	0.554	1719.9	0.042
9.05 Domestic Supplier Quality	7398.3**	0.773	455.2	-0.053	4973.2**	0.770	1514.2	0.015
D. Context for Firm Strategy and Rivalry								
5.11 Intellectual Property Protection	5956.6**	0.744	1380.3**	0.194	3990.0**	0.792	-124.5	-0.062
8.03 Irregular Payments (Bribery)	4616.6**	0.753	1112.5*	0.170	2664.2**	0.623	598.4	-0.033
1.01 Tariff Liberalization	5636.8**	0.593	1199.4**	0.200	2384.7**	0.192	78.3	-0.062
1.02 Hidden Trade Barrier Liberalization	4898.0**	0.446	1201.3**	0.249	2720.5**	0.280	-43.4	-0.062
1.13 Openness to Foreign Investors	3113.6**	0.146	1297.9**	0.476	133.7	-0.066	104.3	-0.061
9.17 Intensity of Local Competition	10770.9**	0.428	137.1	-0.066	6442.9**	0.244	2783.1**	0.239
9.09 Extent of Locally Based Competitors	3063.9	0.031	758.2	0.002	2365.2	0.036	1294.3	0.031
8.02 Effectiveness of Anti-trust Policy	6849.2**	0.562	-75.1	-0.066	4276.9**	0.570	-421.2	-0.055

Note: * denotes $p < 0.10$, ** denotes $p < 0.05$

Table 2 Bivariate Regression Results for all Countries, Dependent Variable: 1991-1996 GDP Per Capita Growth

	Slope	Adj. R^2
I. Company Operations & Strategy		
9.07 Nature of Competitive Advantage	1.32	0.015
9.14 Value Chain Presence	1.25	-0.007
6.09 Attention to Staff Training	3.20**	0.098
9.06 Capacity for Innovation	0.81	-0.014
9.03 Control of International Distribution	3.16**	0.081
9.04 Extent of Branding	-0.56	-0.018
9.10 Breadth of International Markets	3.59**	0.079
9.11 Extent of Regional Sales	1.50	0.011
II. Quality of the National Business Environment		
A. Factor (Input) Conditions		
1. Physical Infrastructure		
4.01 Overall Infrastructure Quality	1.78**	0.070
a. Basic		
4.02 Road Infrastructure Quality	1.28**	0.058
4.09 Power Infrastructure Adequacy	1.02	0.017
4.03 Railroad Infrastructure Development	-0.56	0.005
4.05 Port Infrastructure Quality	1.18	0.029
4.04 Air Transport Infrastructure Quality	1.90**	0.107
b. Advanced		
4.06 Telephone / Fax Infrastructure Quality	4.28**	0.341
4.08 International Direct Dial Communications Costs	2.29**	0.092
4.11 Quality of W'housing, Storage, & Distribution (logistical) Networks	2.18**	0.067
2. Administrative Infrastructure		
8.14 Safeguarding of Personal Security	2.39**	0.275
8.05 Judicial Independence	-0.05	-0.022
8.10 Adequacy of Private Sector Legal Recourse	0.57	-0.009
2.02 Admin. / Regulatory Burden	1.99**	0.122
3. Information Infrastructure		
9.02 Business Information Availability	2.89**	0.120
9.15 Computer Utilization	2.74*	0.037
4. Capital Availability		
3.01 Financial Market Sophistication	1.27*	0.055
9.16 Stock Market Access	2.02**	0.088
3.02 Venture Capital Availability	1.98**	0.136
5. Human Resources		
7.05 Quality of Primary and Secondary Education	-0.77	0.001
7.04 Adequacy of Average Years of Schooling	-1.01	0.018
5.12 Quality of Scientists & Engineers	-0.89	0.002
6.16 Quality of Business Schools	0.98	0.013
6. Science & Technology		
5.04 Public Investment in Non-Military R&D	1.52*	0.044
5.03 Quality of Science Research Institutions	-1.35*	0.037
5.06 University / Industry Research Collaboration	1.89*	0.042
B. Demand Conditions		
9.01 Buyer Sophistication	4.10**	0.170
9.12 Demanding Regulatory Standards	-0.41	-0.020
1.14 Openness of Public Sector Contracts	1.14	0.019
C. Related and Supporting Industries		
9.13 Domestic Supplier Quantity	2.11	0.020
9.05 Domestic Supplier Quality	4.02**	0.175
D. Context for Firm Strategy and Rivalry		
5.11 Intellectual Property Protection	3.11**	0.177
8.03 Irregular Payments (Bribery)	1.87**	0.098
1.01 Tariff Liberalization	1.79**	0.070
1.02 Hidden Trade Barrier Liberalization	1.16	0.030
1.13 Openness to Foreign Investors	0.25	-0.019
9.17 Intensity of Local Competition	5.99**	0.274
9.09 Extent of Locally Based Competitors	3.04**	0.141
8.02 Effectiveness of Anti-trust Policy	2.67**	0.114

Note: 1991 GDP per capita is included in the regressions to adjust for initial income level
* denotes $p < 0.10$, ** denotes $p < 0.05$

Table 3 Country Rankings

Country	Country Code	1996 GDP Per Capita	MICI (All Variables)	1997 Competitiveness Index	1998 Competitiveness Index
United States	USA	27,329	1	3	3
Finland	FIN	18,385	2	18	15
Netherlands	NTH	20,172	3	11	7
Germany	GER	20,207	4	24	24
United Kingdom	UK	19,804	5	7	4
Canada	CAN	21,905	6	4	5
Sweden	SWE	19,616	7	21	23
Denmark	DEN	21,414	8	19	16
Switzerland	SWI	23,651	9	6	8
Singapore	SIN	24,674	10	1	1
France	FRA	21,575	11	22	22
Hong Kong	HON	26,121	12	2	2
Ireland	IRE	17,281	13	15	11
Norway	NOR	22,608	14	10	9
Australia	ASL	20,687	15	16	14
Austria	AUS	19,472	16	26	20
New Zealand	NZL	16,848	17	5	13
Japan	JAP	22,628	18	13	12
Belgium	BEL	20,285	19	30	27
Taiwan	TAI	16,786	20	8	6
Israel	ISR	17,839	21	23	29
Spain	SPA	15,090	22	25	25
Chile	CHL	10,631	23	12	18
Iceland	ICE	20,016	24	37	30
South Africa	SAF	4,214	25	43	42
Italy	ITA	20,493	26	38	41
Malaysia	MAL	11,249	27	9	17
Korea	KOR	12,824	28	20	19
Turkey	TUR	5,885	29	35	40
Czech Republic	CZR	8,920	30	31	35
Hungary	HUN	6,570	31	45	43
Jordan	JOR	5,163	32	42	34
Portugal	POR	11,591	33	29	26
Argentina	ARG	7,066	34	36	36
Brazil	BRA	6,401	35	41	46
Slovak Republic	SLV	7,481	36	34	48
Thailand	THA	8,579	37	17	21
Greece	GRE	9,306	38	47	44
Mexico	MEX	8,085	39	32	32
Egypt	EGY	4,221	40	27	38
Poland	POL	6,906	41	49	49
China	CHN	3,173	42	28	28
Vietnam	VTN	204	43	48	39
India	IND	1,527	44	44	50
Philippines	PHI	2,977	45	33	33
Russia	RUS	4,305	46	52	52
Peru	PER	4,095	47	39	37
Zimbabwe	ZIM	1,548	48	50	51
Colombia	COL	6,793	49	40	47
Venezuela	VZL	8,717	50	46	45
Indonesia	INS	4,418	51	14	31
Ukraine	UKR	2,645	52	51	53

Appendix Survey Question Detail

	Question	Low Score	High Score
I. Company Operations & Strategy			
9.07 Nature of Competitive Advantage	Competitive advantages of your nation's companies in international markets	low cost labor or natural resources	unique products and process
9.14 Value Chain Presence	International companies in your country	are primarily involved in production	conduct their own production, product development, distribution and marketing
6.09 Attention to Staff Training	Staff training is	generally neglected	heavily emphasized
9.06 Capacity for Innovation	The state of technology in companies	imitate or source all technology exclusively from foreign companies	pioneer new products or processes
9.03 Control of International Distribution	To sell internationally, companies in your country	employ foreign distribution and marketing arrangements	have their own foreign distribution and marketing organizations
9.04 Extent of Branding	Companies who sell internationally	sell commodities or market under foreign brands	have their own brands
9.10 Breadth of International Markets	International companies in your country	sell primarily in high-income markets	sell in both high-income and developing markets
9.11 Extent of Regional Sales	International companies in your country	sell little to neighboring countries	sell extensively to neighboring countries
II. Quality of the National Business Environment			
A. Factor (Input) Conditions			
1. Physical Infrastructure			
4.01 Overall Infrastructure Quality	Overall infrastructure in your country is	far worse than in your major trading partners	far superior to that in other countries
a. Basic			
4.02 Road Infrastructure Quality	Road infrastructure	constrains business development	meets business requirements very well
4.09 Power Infrastructure Adequacy	Your country	suffers from severe power shortage	has sufficient power generation capacity
4.03 Railroad Infrastructure Development	Railroads are	underdeveloped	highly developed
4.05 Port Infrastructure Quality	Port facility and inland waterways are	underdeveloped	extensive and sufficient
4.04 Air Transport Infrastructure Quality	Air transport is	inadequate	modern and efficient
b. Advanced			
4.06 Telephone / Fax Infrastructure Quality	Telephones and fax machines are	not in widespread use and difficult to connect	widely used and highly reliable
4.08 International Direct Dial Communications Costs	Direct dial international phone service is	prohibitively expensive	very affordable
4.11 Quality of Warehousing, Storage, & Distribution (logistical) Networks	Warehousing, storage facilities, and distribution networks are	grossly inadequate	well developed
2. Administrative Infrastructure			
8.14 Safeguarding of Personal Security	The police in your country	do not effectively safeguard personal security so that it is an important consideration in business activity	effectively safeguard personal security so that it is not an important consideration in business activity
8.05 Judicial Independence	The judiciary in your country is independent and not subject to interference by the government and/or parties to the dispute	not true	true
8.10 Adequacy of Private Sector Legal Recourse	Private business has recourse to independent and impartial courts for challenging the legality of government actions and/or regulations	not true	true
2.02 Admin. / Regulatory Burden	Administrative regulations that constrain businesses are	pervasive	minimal
3. Information Infrastructure			
9.02 Business Information Availability	Information about business in your country is	scarce and hard to access	extensive and easily available
9.15 Computer Utilization	Use of computers in your country is	limited or non-existent	sophisticated and widespread
4. Capital Availability			
3.01 Financial Market Sophistication	The level of sophistication of financial markets in	lower than international norms	higher than international norms

	Question	Low Score	High Score
	your country is		
9.16 Stock Market Access	Stock markets in your country are	accessible only to the largest firms	open to new and medium-sized companies
3.02 Venture Capital Availability	Venture capital is	not readily available for risk-taking entrepreneurs	readily available for new business development
5. Human Resources			
7.05 Quality of Primary and Secondary Education	The primary and secondary system in your country	fails to equip young workers with basic skills	offers rigorous training in language, math, and sciences
7.04 Adequacy of Average Years of Schooling	Average years of schooling of the labor force is	far below international standard	well sufficient for your country to compete in the world economy
5.12 Quality of Scientists & Engineers	Your country	lacks well-qualified scientists and engineers	has a large pool of competent scientists and engineers
6.16 Quality of Business Schools	Your country	does not have a well-developed management education system for business executives	has first-class business schools to train managers
6. Science & Technology			
5.04 Public Investment in Non-Military R&D	Your country	spends insufficient public funds in non-military R&D	commits substantial public resources to non-military R&D
5.03 Quality of Science Research Institutions	Scientific research institutions in your country are	not internationally reputable	truly world class
5.06 University/Industry Research Collaboration	Research collaboration	does not exist between universities and industry	is very close between universities and industry
B. Demand Conditions			
9.01 Buyer Sophistication	Buyers in your country are	unsophisticated; choose based on the lowest price	knowledgeable, demanding, and buy innovative products
9.12 Demanding Regulatory Standards	Regulatory standards (e.g., product standards, energy, safety) in your country are	lax or non-existent	among the world's most stringent
1.14 Openness of Public Sector Contracts	Public sector contracts are	not adequately open to foreign investors	open to foreign bidders
C. Related and Supporting Industries			
9.13 Domestic Supplier Quantity	Suppliers available in your country are	largely non-existent	numerous and include most important materials, components, equipment, and services
9.05 Domestic Supplier Quality	Supplier capabilities in your country are	inefficient, have little technological capability	internationally competitive, assist in new product and process development
D. Context for Firm Strategy and Rivalry			
5.11 Intellectual Property Protection	Intellectual property is	not adequately protected in your country	well protected in your country
8.03 Irregular Payments (Bribery)	Irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection, or loan applications are	common	not common
1.01 Tariff Liberalization	The level of import tariffs and quotas in your country	significantly raises the cost of acquiring foreign materials and equipment for your firm	is not a serious impediment to your firm's access to foreign materials and equipment
1.02 Hidden Trade Barrier Liberalization	Hidden import barriers (other than published tariffs and quotas) are	an important problem in your country	not an important problem
1.13 Openness to Foreign Investors	Foreign investors	may not acquire control in a domestic company	are free to acquire control of domestic companies
9.17 Intensity of Local Competition	Competition in the local market is	minimal. Market positions rarely change	intense. Market shares fluctuate constantly
9.09 Extent of Locally Based Competitors	Competition in the local market consists primarily of	imports	companies with operations in the country
8.02 Effectiveness of Anti-trust Policy	Antitrust or anti-monopoly policy in your country	is not effective at promoting competition	effectively promotes competition

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ENDNOTES

[1] Gregory Bond and Steven Yonish played a major role in the statistical analyses reported in this article, with special thanks to Andrew Warner for both his contribution to compiling the data and his thoughtful comments. Felipe Larraín B., Anita McGahan, Jan Rivkin, and Scott Stern provided helpful comments. This article draws from a book in progress, *Competing for Prosperity: the Microeconomic Foundations of Economic Development*. The ideas build on the framework first described in Porter (1990) and developed in a series of subsequent studies and papers. This line of research has benefited greatly from joint work and discussions with Michael Enright, Michael Fairbanks, Pankaj Ghemawat, Veronica Ingham, Tarun Khanna, Stace Lindsay, Lucia Marshall, U. Srinivasa Rangan, Mariko Sakakibara, Dawn Sylvester, Hirotaka Takeuchi, and Claas van der Linde.

[2] See the Appendix for the actual wording of each question, together with the definitions of low and high.

[3] An additional question was included about corporate diversification, which is beyond the scope of this article.

[4] This measurement constraint reduced the statistical power of the following analysis. Furthermore, in analyzing subgroups of countries where the degrees of freedom were limited, this problem is exacerbated.

[5] Only three countries had a meaningful proportion of outliers in responses: Indonesia, Jordan, and Ukraine. We included these countries in the analysis. Rerunning the analysis without them confirmed the stability of the results.

[6] The source can be found in *The Global Competitiveness Report 1997* (variable 5.15).

[7] I omitted Luxembourg from the analysis because its tiny population and idiosyncratic circumstances limited its comparability with the rest of the sample. It also had less than ten survey responses.

[8] There is less income variation between countries in the low and high ends of the income spectrum, with a large variation in per capita income in the middle. The modest variance at the low income end has much to do with the limited country sample. The income variation affects the characteristics of the sample will be important to keep in mind when interpreting the results.

[9] GDP per worker is employed as a productivity measure in some studies. I used the broader measure here because holders of capital, not only workers, contribute to national productivity. Also, GDP per worker can be increased by high unemployment or low workforce participation which do not increase wealth. In comparing the United States and France, for example, the United States has absorbed a huge influx of new workers (higher workforce participation) over the last decade, while France has maintained high GDP per worker but with high unemployment and a large student population not counted as part of the potential workforce.

[10] Statistical significance at α=5% and α=10% (all two-tailed tests) is noted in the table.

[11] The extent of locally based competitors is the one variable from the special questions that is not significant, but its relationship to productivity is complex. In low income economies, the presence of many locally based competitors may signify an economy shielded from international competition with negative implications for productivity. In an open economy with intense local rivalry, the theory suggests that the presence of locally based competitors will enhance productivity because of more intense pressures to upgrade and positive externalities in the local business environment. Thus a more complex interactive specification is indicated, which will be an area for future research when a larger sample size is available. Interestingly, the extent of locally based competitors proved significant in the growth equations where these ambiguities in the specification are largely absent.

[12] The available human resource variables, largely concerned with the quantity and quality of schools, have only a modest relationship to the level of GDP per capita. National investment in schools and universities *per se* appears insufficient to explaining differences in national productivity without parallel mechanisms to foster the development of skills meaningful to companies, and to create demand in companies for more skilled employees. Interestingly, the variable measuring attention to skills training, which is linked directly to companies, has a considerably higher R^2 than any of the other human resource-related measures in the level analysis.

[13] For a discussion of these issues see Porter and van der Linde (1995), and the essay by Panayotou and Vincent in *The Global Competitiveness Report 1997*.

[14] I omitted the buyer sophistication variable to test the sensitivity of my overall results. The results were qualitatively similar.

[15] Common factor analysis is a statistical technique for summarizing data by accounting for the common variance among all included variables. An alternative approach using a principal components analysis yielded identical qualitative results.

[16] In both variable sets, no other factor accounted for more than 7.3% of the covariance.

[17] The special survey variables exclude detailed measures of types of physical infrastructure, administrative infrastructure, and the like.

[18] The forecast region has wider bands than a 95% mean confidence region. The latter provides a confidence interval for a given level of competitiveness over repeated observations. The forecast region method, in contrast, reflects a higher degree of inherent uncertainty in predicting a single observation. As a result, interpretation of the proximity of data points to the regression line is undertaken with appropriate caveats. Note that the forecast region widens slightly as it moves away from the "center" of the graph. The center is the point located at the intersection of the mean GDP per capita level and mean factor score.

[19] The presence of regional clustering can diminish the appropriateness of data at the national level.

[20] For simplicity, I present only the results for the broader set of microeconomic variables. In both subgroups, the special survey variables are highly correlated with the broader set of microeconomic variables, and explain virtually all of the variance explained by the broader set.

[21] Past macroeconomic variables have been shown to play a significant role in determining current wealth levels. For example, Mankiw *et. al.* (1992) find that the national savings rate (defined as the share of private and government investment in real GDP), population growth, and human capital (proxied by the secondary school enrollment rate) averaged over the 1960-1985 time period explain a high proportion of the cross-country variation in the 1985 level of output per worker in a broad set of countries. However, the explanatory power of the variables significantly decreases when the sample is restricted to OECD countries, which constitute over one half of my sample. The results of Mankiw *et. al.*'s analysis versus mine appears to be heavily influenced by the use of historical macro variables, which we did not have access to given the time available, and the inclusion of many very poor countries.

[22] Note that years of schooling is correlated with various other more micro-based human resource measures. Following Hall and Jones (1998) and Nordhaus (1994), I also explored the impact of distance from the equator (DISEQ) on productivity levels, albeit with a smaller sample involving fewer low income countries. Hall and Jones find that DISEQ has a significantly positive (although indirect) impact on productivity. Interestingly, when MICI is introduced into the regression, there is no longer a statistically significant relationship between DISEQ and the level of productivity. It is interesting to speculate whether there is any causal link between DISEQ and the ability to improve the microeconomic environment, which represents a question for future research. With or without MICI included, DISEQ was significantly *negative* for high income countries and insignificant for low income countries. This raises some doubt about the causal role of climate *per se*.

[23] MICI Growth explained 53% of the variance in growth among low income countries, 19% among middle income countries, and only 8% among high income countries. The latter result may again reflect limited variance in the survey responses.

[24] Gross domestic investment and national saving were highly correlated and about equally important in explaining the variance in growth (national savings was slightly inferior), so they were treated as alternatives.

[25] Mankiw (1995) provides a summary of some of the most noteworthy findings in the growth literature: a low initial level of income is associated with a high subsequent growth rate when other variables are held constant; the share of output allocated to investment and various measures of human capital, such as enrollment rates in primary and secondary schools, are positively associated with per capita GDP growth; population growth, political instability, and distorted markets are negatively associated with growth. Countries with better developed financial markets tend to have higher growth rates. I treated financial markets as part of the microeconomic business environment and found several fine-grained measures of financial market development to be significant.

[26] Seventeen "low" income countries had a GDP per capita less than $7,000; seventeen "medium" income countries had a GDP per capita between $7,000 and $19,000; and eighteen "high" income countries had a GDP per capita greater than $19,000.

[27] The analysis was also conducted for two subgroups—lower income and higher income. While more variables were statistically significant, the results were qualitatively similar but less revealing.

[28] For the lower per capita GDP countries, far fewer variables were significant than in the full sample, although part of the reason was more statistical (fewer degrees of freedom, less variance in GDP per capita and survey responses) than economic.

[29] Low income countries have the highest variance in growth, and the proportion of variance explained is highest. Also, while the adequacy of years of schooling was barely significant, the quality of primary and secondary education was actually negative and significant. This may be an example of the consequences when business environment moves too far ahead of company needs.

[30] I also explored the relative influence of macro and micro in the country income subgroups. MICI Growth contributed much more to explained variance in the low income countries than the macro variables. Conversely, the macro variables contributed substantially more to explained variance in the high income countries than the micro variables. These results, however, must be treated as preliminary.

[31] MICI Growth was used to rank countries based on microeconomic growth potential (not shown). As might be expected given the overlapping variables, the correlation between MICI and MICI Growth was very high. Some interesting differences in ranking emerged, however. Germany and to a lesser extent Switzerland were ranked worse on microeconomic growth climate than on level, as were the Slovak Republic and Russia. These are countries where the sources of dynamism (e.g., local rivalry, business information, equity capital availability) have been lagging. Singapore was ranked higher on microeconomic growth than on level, together with Vietnam and Portugal.